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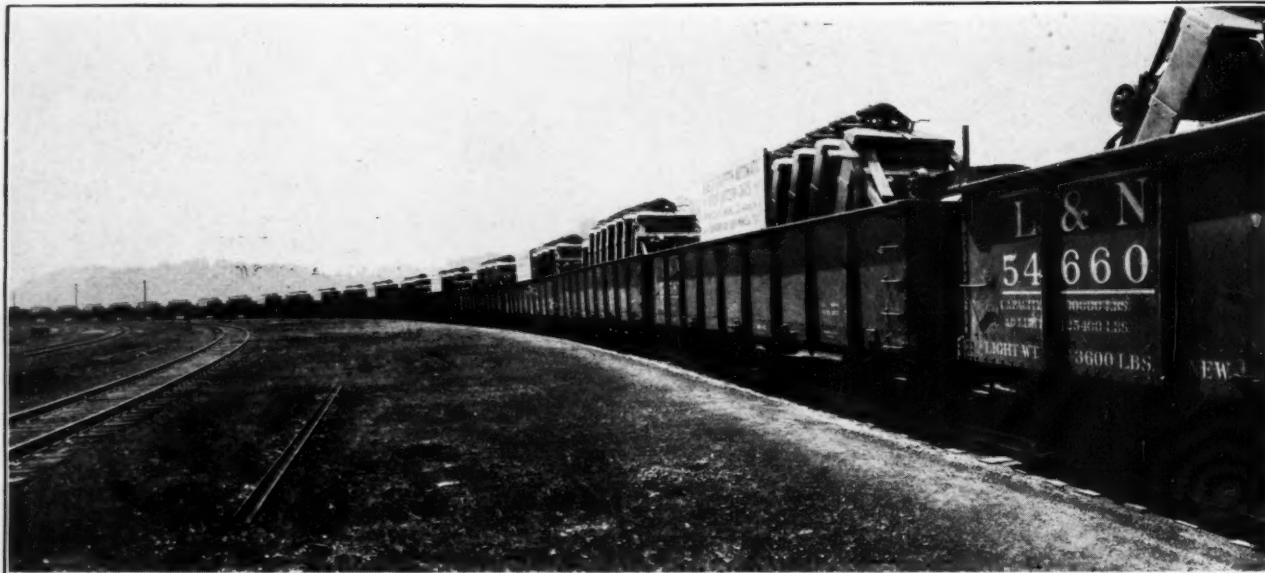
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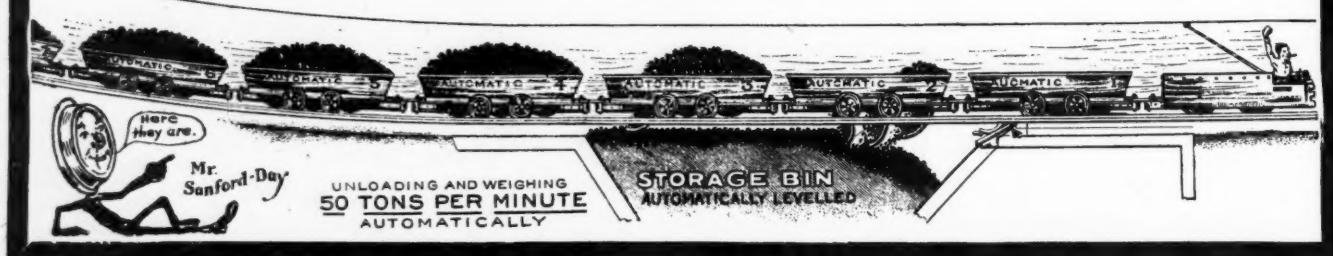
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With which is consolidated "The Colliery Engineer" and "Mines and Minerals"
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Russia Adopts American Practice

WE IN AMERICA are often prone to believe that even our best methods are far from being what they should be. This may be quite true and yet they may be appreciably ahead of those of other countries and peoples. We hear much about scientific management and what may be accomplished by it. Next week, however, Wallace Clark will tell *Coal Age* readers how this means of attacking the problem of coal production has benefited the coal operators of Russia. Even now several of the best coal-mining men that the United States has yet produced are in that country at the behest of the Soviet Government. The New Russia is open-minded, anxious to learn, and finds American methods profitable.

TWO BIRDS WITH ONE STONE

"Wireless mines" today are by no means uncommon, although only a few years ago they were unheard of. The storage battery is allowing the coal man to take electrical energy right up to the working face without loss of voltage and without danger from arcs or sparks. It is thus rendering electrical operation not only safe but economical. Next week E. J. Gealy, of the editorial staff of *Coal Age*, will tell readers of this magazine something about the new epoch of safety that the use of permissible-battery equipment renders possible. Safety and economy are two subjects in which all mining men are at all times deeply interested: when any piece of equipment or process combines both of these attributes it possesses a double attraction.

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Complete details of all O-B Bonds and Welding Equipment are found on pages 654-715, O-B No. 20 Catalog. Send for your copy!

THERE never was a time when the need for lower production costs in mining was more fully recognized than it is today. In this recognition, mining men have turned to better return circuits as one way to lower the cost of production and increase net profits.

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Leaders in the mining industry, the men who have lowered production costs with better bonding, find O-B Bonds provide better return circuits. Ease in applying the O-B Arc-Weld Bonds assure sound welds. An inner vibration sleeve absorbs rail vibrations and greatly adds to the life of the bond. In the Copper Alloy Arc-Weld Bond, the ends of the copper cable extend thru the terminal assuring complete fusion of the cable in the weld. The strands of the Steel Arc-Weld Bond are welded to the terminal at the factory. Either bond gives a solid and continuous low resistance rail joint.

Now is the time; look to your bonding to increase net profits, and look to O-B for better bonds.

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Devoted to the Operating, Technical and Business
Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 31

NEW YORK, JUNE 9, 1927

Number 23

The N.C.A. and Progress

NEXT WEEK the National Coal Association will meet in Chicago to hold its tenth annual convention. The ten years in which it has been in existence have been years of tremendous change, and the organization has changed and is changing with them. Started as a necessary contact between the federal government and the individual bituminous coal producer during the World War, the National Coal Association has passed through the stages of wartime *liaison* agency and defense organization in the unsettled days of postwar re-adjustments into the broader field of constructive service in building up the industry.

Despite honest differences which have arisen over projects and policies in a period in which men of high character have disagreed with their fellows as to the best method of working out complex industrial and social problems, the achievements of this organization during the ten years it has been functioning have constituted a record of which no coal man need be ashamed. Achievements of the past, however, are of value today only as a bond of promise of greater progress in the future. And the demands of tomorrow are big enough to engage the serious attention of all thoughtful coal men. Major problems of economics press for solution. In some cases the answer can come only through concerted action; in others, solution will be measurably accelerated by group consideration and group decision.

No organization in the bituminous coal industry has greater potentialities for constructive accomplishment than the National Coal Association. Because it is primarily an association of coal company executives, it is peculiarly fitted to deal with those questions on which the impulse for solution must come from the top. Through sympathetic co-operation it can do much to encourage the further development of production technique. Its influence in spreading the gospel of safety can be widely felt. Compensation insurance has become a problem of growing importance; the National Coal Association offers a logical forum for the discussion of the question and the formulation of policies which will give proper protection to the workers and at the same time safeguard the interests of the employer.

The broadest field undoubtedly lies in the study of the problems of distribution. Here is a subject which calls for sharp attack from all sides. We need to know more about the markets for coal, the uses to which the product is put and the relative importance of different consuming industries and of different markets. This, of course, requires extensive research activity on the scientific engineering side and the development of much more statistical data on markets, production, trade channels, buying habits, costs, profits and volume than now exist. Much of the data needed cannot, it is true, be gathered by or through the National Coal Association, but its support of a broad statistical program

will make much easier the task of collecting and compiling these data from other sources.

This recital of activities is not a catalog of things undone. On the contrary, those responsible for directing the National Coal Association have been unmindful neither of their obligations nor their opportunities. They have enlarged their interests as the need appeared and the finances of the association supported them. Next week in Chicago they will review what already has been accomplished and will point the way to further progress. It will be a meeting that should be well-worth any coal company executive's time and attendance.

Controlled Heat

ONE of the long suits of the oil industry is the thermostat. "It is," say the salesmen, "easy to control the heat by means of this little instrument. Before you get up in the morning you can press the button and turn on the oil. No need to get up, to put on your bathrobe and slippers, to run down to the cold cellar and shake the grate" and so forth.

The would-be purchaser is, accordingly, carried away with the idea that thermostatic equipment is applicable to oil burners only, whereas it is available to coal consumers also. They can use it to regulate the draft and so increase or decrease the heat of the fire. The coal man should not "let the Devil steal all the best tunes," but recommend the thermostat to his clients. Otherwise the oil-burner agent will use an argument exclusively to which the coal retailer is equally entitled.

Then also the introduction of thermostats by speeding up the fire about twenty minutes earlier in the morning will increase coal consumption, which is not an altogether undesirable outcome in these days of inadequate market.

Air Blasts Bring New Hazards

RECENT anthracite squeezes, air blasts and explosions following one another in the same mine reveal the danger of honeycombing a bed of coal. Methane is almost sure to lurk in those hidden recesses if the mine generates gas. Proper bleeding either by airways in the coal or by drillholes to the surface may partly reduce the danger, but it will exist wherever there are large areas to keep ventilated.

Air blasts may occur wherever inadequate pillars are left. Hitherto they have been infrequent in this country, but they have been somewhat common in India, probably because the overburden lacked strength to resist shear and inadequate pillars were provided. When the roof breaks due to bending-moment stresses and thrusts, it comes down slowly and air blasts are less likely. The pillars in the anthracite region, as a rule, are not inadequate, but they become so when they

are being withdrawn. Moreover, faults and glacial till provide favorable conditions for sudden "sits" of the mine roof.

Doubtless other accidents similar to those in the Woodward colliery will be experienced, because the conditions in other mines are probably similar, and the precautions needed to remove entirely the possibility of their recurrence would have to be exceedingly radical to be adequately protective, perhaps, even doubling the price of coal.

The bituminous regions, however, have a better opportunity, and conditions less likely to create hazard. They have in general no glacial till to make a weak roof nor faults to aid a sudden fall. But the bituminous mine would nevertheless do well to proceed on the principle of cleaning up as it goes along, thus eliminating the possibility of squeezes and air blasts and ridding itself of gas traps. When a sudden and tremendous pressure is created in a mine, gas is driven into the airways, safety lamp glasses may be broken by violence, sparks may be generated by flying objects and the firedamp may be so much heated by compression as to ignite more easily and thus make conditions dangerous that without such heating might be safe.

Favored But Neglected

WARM WEATHER is the signal for countless lovers of the outdoors to "dust off" the vacuum bottle, assemble a picnic lunch, and drive to a shady spot in the country to spend Saturday afternoon or Sunday. When the vacuum bottles are turned upside down to drain out the last drops of their contents many of these people will read the statement on the bottom: "Keeps liquids cold 72 hours; keeps liquids hot 24 hours." Many may wonder why the bottles will keep liquids cold longer than they will keep them hot.

The principal reason for this is because the transfer of heat through the walls of any container is proportional to the difference in temperature. When the air temperature is 80 deg. F. and that of the liquid is 180 deg. the difference is 100 deg. If the liquid is to be kept cold, say at 40 deg., the difference between its temperature and that of the air is only 40 deg., or less than half that with the hot contents.

Applying this comparison to the heating of buildings in winter, and to their refrigeration to a comfortable point in summer, a still greater difference in favor of keeping cool is apparent. Assume that the mean winter temperature is 30 deg. F. and that the air in the building is to be kept at 70 deg. The difference tending to cause a loss of heat is 40 deg. Assume again that the mean summer temperature is 80 deg., and that the air in the building is to be kept down to 70 deg. The difference is but 10 deg., or one-fourth the difference when heating.

Keeping Up With the Joneses

BETTER HOUSING in cities is an evolution. It has not come suddenly or by direction but has grown by competition; each individual tenant or owner, wanting to improve his status in the community or to enjoy greater comfort or more pleasurable surroundings, has by lease, purchase or construction provided as far as his income allowed for the satisfaction of his needs.

In mine villages, on the other hand, the progress has come largely by the will and at the pleasure of the coal

operator. That is unfortunate. Rent, like price in the selling of coal, has been the dominant consideration with the tenant, whereas he should have an opportunity to select a better house paying a better rent for it. Competition in housing will have its usual effect. It will gradually create a demand for something better. As the flivver has been replaced by the higher priced automobile so the battened or clap-boarded house without interior piping, bathroom or furnace will be replaced by a better home, permanently and properly equipped.

This competition can be created by building better houses year by year as houses are needed, asking a higher rent for them than for those that are already erected. The desire to occupy a better home is as natural as a desire to wear better clothes or have a better automobile. It can be created merely by providing the opportunity. There is no restriction now on the rent of new housing and though perhaps it cannot yet be raised to the level of a good investment it should be possible to get a slightly better return than on the old type of house that needs frequent repair and will too often not yield enough revenue to pay the repair costs.

Inquiry may develop that there are several persons in every mine village who would be willing to pay a bigger rent for a better dwelling. It seems strange to see a fine high-powered automobile standing before a dwelling that barely cost as much, the owner able to pay for the motor car but begrudging even the meager rent he has to pay on the home in which he and his family live. The false psychology comes from the standardization of house types and the uniformity of price per room.

Furnace Improvement

MANY of us have derived a certain amount of satisfaction and have saved some fuel by the experiment of throwing a flaming newspaper into a large stove or heating furnace to ignite the gasses being driven off from a fresh charge of bituminous coal which has smothered the flame.

The frequent smothering of the flame and consequent escape up the stack, unburned, of gases distilled from new charges of coal is one of the principal difficulties to be overcome in the use of bituminous coal for domestic heating. Complete combustion of these gases would save fuel and reduce smoke and soot in the neighborhood. There are two reasons for the fuel saving. More heat would be generated, and a larger percentage of the total generated heat would be absorbed because of the less sooty condition in the furnace.

Is it not possible that the flaming newspaper effect could be maintained economically in the furnace by the addition of a small gas burner? A large percentage of the homes having furnaces are using gas for cooking and therefore have a gas supply line in the basement.

The suggestion is therefore made that one or several pilot gas burners be installed at a level coinciding approximately with the top of a full new charge of fuel. To be sure, many mechanical difficulties would have to be overcome, and the amount of gas used and hence its cost would have to be held to a figure that would not overbalance the advantages gained.

If this possibility has not been investigated thoroughly, and by extensive experiments found to be impractical, it is one to which the bituminous industry should give thought. A slight improvement in the method of utilizing coal in domestic furnaces would bring about the displacement of oil burners.

Small Mine Maintains Favorable Cost by Using Modern Methods and Equipment

Changes in Pillar-Drawing Methods Has Increased Recovery 15 per Cent—For Every Fifteen Men There Is an Assistant Foreman Who Loads and Shoots the Holes in that Section

COMPARISON of the 1920 and 1927 directories of mining companies operating in the Big Sandy field of Kentucky reveals the fact that comparatively few of the smaller mines are still being operated by the same interests as in 1920. The Virgie No. 1 mine of the Rogers Elkhorn Coal Co. is one of the exceptions. This in itself is a good indication that the mine is either operating under conditions above the average or that commendable methods are employed.

This mine, which is located about 18 miles "below" Jenkins on Shelby Creek, was opened in 1918. The greatest production of any one month, 17,000 tons, was attained in January of this year. The coal comes from the Elkhorn bed which in this locality runs from 5 to 8 ft. thick, contains a 5-in. parting 32 in. from the bottom, and is topped by an average of 12 in. of draw slate. The bed lies practically horizontal and is several hundred feet higher than the railroad. Cover varies from nothing to perhaps 700 ft. in thickness, and the shape of the coal area is highly irregular.

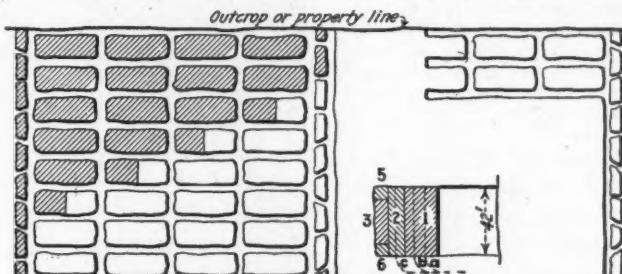
Because the actual coal area now tributary to the mine is small—approximately 340 acres—a special effort has been made to obtain high recovery. Some time ago the average was 75 per cent, but now it is estimated that fully 90 per cent of the coal is being taken. This increase in recovery, coupled with a production cost which might well be envied by this mine's neighbors, prompts a brief description of the inside methods employed.

Cutting is done by two arcwalls machines equipped with 7½-ft. cutter bars mounted on "goose necks." Gathering is performed by three 6-ton cable-reel locomotives and haulage by one 10-ton locomotive. All of this equipment is of "Jeffrey," manufacture and the track gage is 48 in. which is the widest employed in the field. All mine cars are equipped with roller bearings.

In the room-and-pillar system employed the butt or room entries are driven to the crop or boundary and the pillars robbed retreating immediately after the rooms have been worked to full depth. Because of the wide variation encountered in both cover weight and roof strength, it has been found that even in this small mine every section presents problems which require in-

dividual study and experimentation. This results in the adoption of a wide range of detail in methods.

The changed practice, however, which increased the recovery from 75 to 90 per cent, is followed in all parts of the mine. This change eliminated the converging of two pillar lines to a point. The accompanying drawings show the old and new methods. Pressure concentrated at the point caused a loss of room stumps and chain pillars. With the old method rooms were necked on both sides and were driven 18 ft. wide on 50-ft. centers.



New Method of Drawing Pillars

The rooms are driven 18 ft. wide on 60 ft. centers and are necked only one way. The pillar line intersects a solid wall of coal. The insert at the lower right indicates the progressive cuts and track positions in taking a room pillar.

With the new method the rooms are driven the same width but on 60-ft. centers and are necked only one way. This makes it practicable to recover nearly all of the coal in room stumps and chain pillars at the intersection of the pillar line with solid coal. After the last room stump is taken the chain pillar is recovered by laying a track back of it, that is, between the pillar and the unbroken face of solid coal.

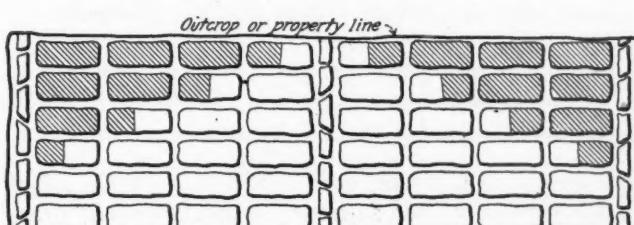
In recovering the room pillars open-end cuts are not made, but instead the coal is taken by a series of butt-off and wing cuts. Referring to the small sketch of a room pillar, the numerals indicate the respective order of the cuts, and letters likewise designate successive track positions.

PROPS SUSTAIN BULK OF DRAW SLATE

In rooms about 90 per cent of the draw slate is held up by props, but in entries all of it is taken down. The arcwalls machines cut out the 5-in. parting and all charging and shooting of holes is done by shot firers.

In the regular 18-ft. rooms six holes are drilled, three in the upper bench and three in the lower. The center or breaker shot is fired first. In the upper bench the holes are drilled as close as possible to the roof and the explosive bedded against the draw slate. In the center hole two sticks of 1½x8-in. permissible powder are used, and in each rib hole 1½ sticks. Two dummies, one 12-in. and one 18-in., are placed in each of the three holes. In the bottom bench the loading consists of 4 to 1 stick of explosive and two 12-in. dummies per hole.

All shooting is done electrically and each shot firer



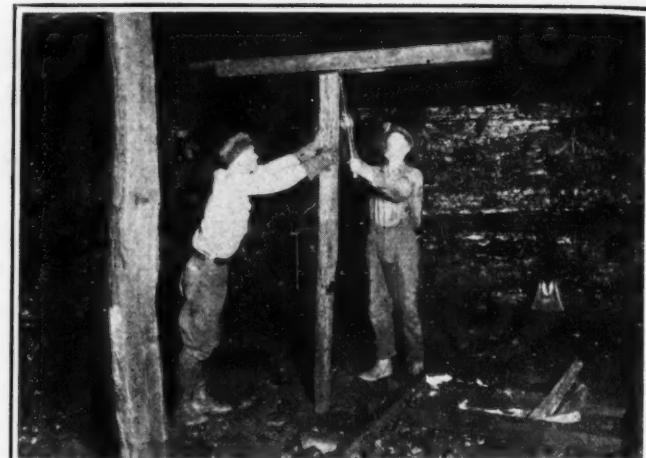
Robbing Retreating by Old Method

The rooms were driven 18 ft. wide on 50 ft. centers and were necked both ways. Concentration of weight at the intersection of the two pillar lines caused the loss of many room stumps and chain pillars.



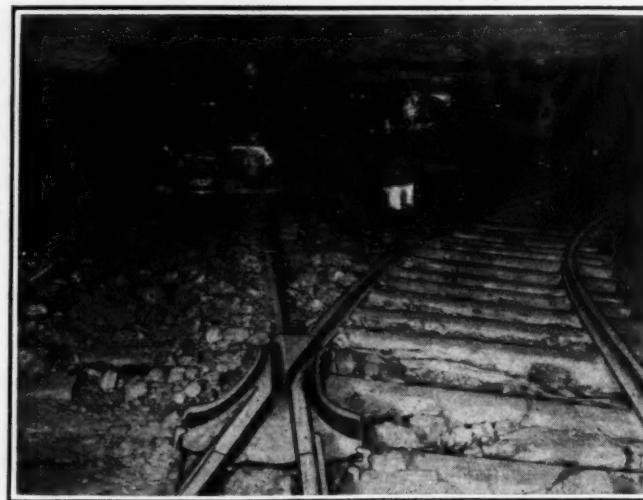
Feeder and Trolley Construction at a High Place

Next in importance to ample feeder capacity is the use of a sufficient number of switches to isolate sections in case of trouble. Here switches in the 500,000-circ.mil feeder and in its tap to the trolley are located on the same inverted stand as is the trolley section-insulator switch.



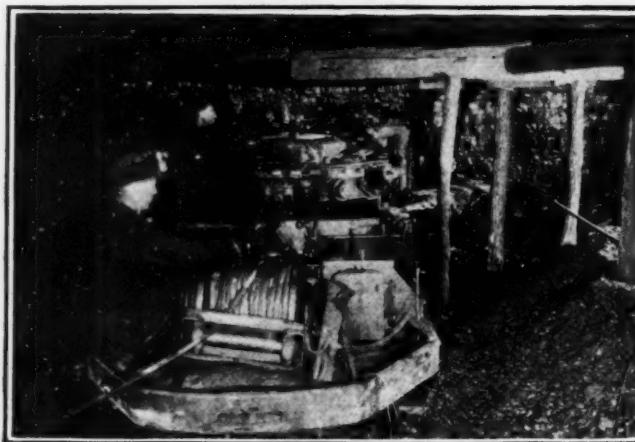
Erecting a Prop in 8-Ft. Coal

This 26-ft. room with track in the center and a row of props on each side is not standard. The width of the standard room is 18 ft. and the track is held to one side leaving the other side for gobbing the draw slate. The room shown is the widest that can be cut with the machines as equipped; and is one in which all of the draw slate is being held in place.



Cast Frog with Inclines and Guard Rails

This type of frog is used on the main haulways. The track gage is 48-in. which is the widest used in this field. In the background is an arcweld machine which has completed the cutting on one entry and is trammimg to another.



Sumping Up in Cutting a Room Pillar

The cut is made in the 5-in. parting which occurs about 32 in. from the bottom. Pillars are taken by making a series of butt-on and wing cuts. None are worked open-ended. Props erected close to the track with heavy caps extending partially over the machine leave but little unprotected roof.



Locomotive and Loaded Trip on the Main Haulway

Equipment is not allowed to loaf in this mine. The 10-ton 275-volt locomotive shown in the photograph does all of the main hauling. Mine car capacity averages 2.15 tons. Two hundred of the cars are equipped with spiral roller bearings and the other 50 with solid rollers.

acts also as an assistant foreman over about fifteen men. By this arrangement the shooting is definitely controlled so as to obtain the maximum percentage of lump. All miners are under close supervision.

Several other details of operation set this mine apart from the ordinary mine of its size. For instance auto-

matic tread-rail doors are used and these are maintained in such condition that failures in operation are practically out of the question. Cast frogs with integral inclines and guard rails are installed on the main haulways.

A third feature is the generous use of 500,000-circ.mil

cooper feeder supported in permanent hangers, yet installed in such a way that heavy falls of slate will pull the cable out of the hangers without either cutting the wires or the whole cable.

Power at 250 volts is generated in a plant located close to the tipple. In the boiler room is one 300-hp. water-tube boiler, an open feed water heater, and a plunger-type of feed pump. A geared turbo-generator and a direct-connected engine unit make up the generating equipment. These two machines are operated in parallel, and non-condensing.

The boiler is hand fired but the only fuel used is refuse from the tipple picking table. This consists chiefly of bone coal which contains only about 11 per cent of incombustible. The availability of this unmarketable product and an abundant supply of feed water which, without treatment, deposits practically no scale, are two reasons why purchased power has not been considered seriously at this mine. This source of

power was not available, however, when the mine was opened.

The two-track tipple is equipped with shaker screens, picking tables and loading boom. On one track, 4-in. lump, 2-in. lump, or mine run can be loaded; on the other slack, straight run-of-mine, 4-in. run-of-mine, or 2x4-in. egg can be handled. A 50-ton bin is provided for the storage of egg coal.

Taking into consideration the limited acreage and relatively small capacity of the mine, the equipment as a whole is quite modern, yet the investment has been held to a minimum. There are, however, many indications that capital has been expended judiciously for equipment capable of reducing costs or improving quality. In line with this policy three improvements, namely, the erection of an aerial tramway for slate disposal, the replacement of monitors by a rope-and-button conveyor, and the installation of a stoker in the power house, are being considered.

Research Board in Britain Recommends Underground Support Improvements*

The British Safety in Mines Research Board has made investigations and issued Report No. 30†, on the support of underground workings in the East Midlands coals fields. For purposes of comparison the number of men killed and injured is calculated on the basis of 100,000 man-shifts. This is considered a more convenient basis than per 1,000 men employed. The highest figure is shown by South Wales with 34.8 killed or injured per 100,000 man-shifts per annum; the East Midlands are second with 31.4, and Scotland is lowest with 20.4.

In the East Midlands the majority of the mines have adopted the longwall system, although the pillar-and-stall method is used at some of the shallower operations. Intensive mining is unusual and the average speed of advance is low. In certain cases the latter is intentional as it is often desired to obtain the maximum loosening effect of the roof weight and, thereby avoid the use of explosives and the production of small coal.

Where the longwall system is employed, it is found that the face labor must be mobile if the method is to be most effective. This is necessary so that the number of men in a room can be varied, when required, to keep the face on line. In such cases the Board states that the workers should not continually be changed and recommends that the more experienced men be given authority over other miners.

The Board also states that the use of cross-bars instead of cap pieces is more conducive to safety and recommends that, in many cases, the distance between supports be reduced. In these seams, wooden cross-bars take up too much space and might well be replaced by 2-in. steel bars. Where loose or friable roofs are encountered, lighter cross-bars may be set above and at right angles to the main bars. These primary bars may be set with cap-pieces over each end so that each could carry three or more of the lighter bars.

An interesting type of steel prop has been adopted by the Butterley Co., Ltd., and is employed at eleven collieries in Nottinghamshire and Derbyshire. This consists of a steel tube closed at the top, a sliding sleeve

with a slot having a bayonet joint at the lower end, and a wooden plug. A short bolt passes through the steel tube 6 in. from the top and engages with the slot in the sleeve. This bolt attaches the sleeve to the tube and, at the same time, permits it to slide the length of the slot. Before the prop is set, the sleeve is raised to its full length and turned over the bayonet joint. The wooden plug is then driven into the sleeve until its end is down to the top of the tube, after which the sleeve is turned back to release it from the bayonet joint. When the weight of the roof comes onto the prop, it is first taken by the wooden plug which is gradually crushed within the sleeve. The latter slips downward and thus allows a gradual adjustment of about 6 in. in the length of the prop before the point of maximum resistance is reached.

Where this prop has been used only one accident (non-fatal) has occurred during more than a million man-shifts. It is asserted that this prop has less bulk and greater durability than timber, can be readily withdrawn and shows a saving of 2.87d. (5½c.) per ton. More than 14,000 of these props are in use at the present time.

The Board's report concludes that much might be done in the furtherance of safety by education, safety campaigns and by popularizing the official regulations.

Cunard Ships May Burn Coal Again Because of High Cost of Oil

In his annual report to the stockholders of the Cunard Line, Sir Thomas Royden, chairman of the company, recently declared that the expenditure for fuel oil by that company now exceeds that of the British Admiralty. He further stated that if the price of oil continues to advance, the Cunard Line might find it necessary to revert to coal-burning equipment for at least part, if not all, of its fleet.

Sir Thomas said that he was aware of the higher efficiency of oil when compared with coal, and pointed out that during the recent British coal strike the vessels were enabled to maintain their regular schedules because of the fact that they were oil burners. "At the same time, there are limits to the price which we can afford to pay for fuel oil," he said. Fuel oil now costs 85s. per ton at Liverpool, compared with 72s. 6d. on Jan. 1, 1926. Coal costs approximately half of the above figure.

*Abstract prepared by C. H. S. Tupholme, London, England.

†This report may be obtained for 2d. (4c.) net from H. M. Stationery Office, Adastral House, Kingsway, London, W.C. 2, England.

Economic Advantages Show Desirability Of Automatic Substitution Control

Local Conditions Govern Choice of Converting Unit but Operating Performance
Is Function of Mine Layout, Temperature and Circuit Characteristics—
Savings Attainable Dictate Automatic Control

By M. F. Packard and R. E. Powers

General Engineers, Westinghouse Electric & Mfg. Co.,
East Pittsburgh, Pa.

THE PROBLEM of economically converting and distributing electrical energy is beginning to receive the attention that its importance warrants. This is particularly true in coal mining. The low prices for coal resulting from competition and other economic conditions make it imperative that mining costs be reduced. The cost of power required to operate a modern electricified mine is not an insignificant item and there are opportunities for attractive savings in power bills.

Underground haulage consumes a large percentage of the energy used at a mine. The desirable characteristics of the series-wound direct-current motor for this service naturally led to the adoption of the direct-current system of distribution, although alternating current is easily applicable to many purposes both above and below ground and is used extensively in surface operations. The majority of mines use 250 to 270-volt direct-current systems, although 600-volt systems are by no means uncommon. The 600-volt distribution possesses certain advantages but most of these are offset by the added maintenance to the motors and control equipment and by the increased hazard of operation. Economic power distribution may be secured at the lower voltage, without excessive use of copper, if the substations are properly located with respect to the load centers. Automatic substation control plays a big part in making this possible.

IDEAL LOCATION IS AT LOAD CENTERS

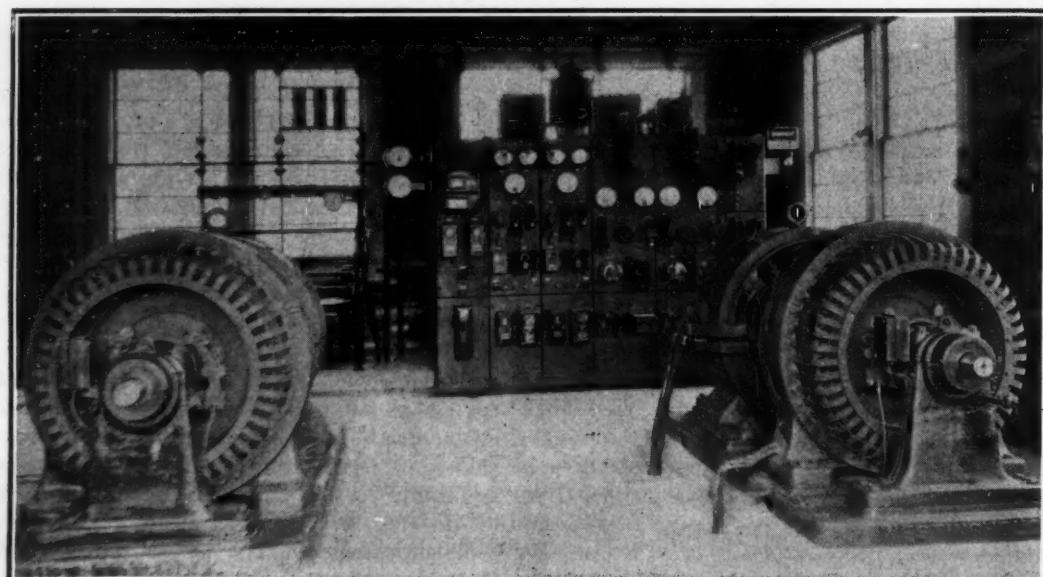
The ideal location of substation equipment is at the various load centers throughout the mine, the capacity of the substations being properly proportioned to the loads at these points. Distribution of capacity by this

means insures high average operating voltage, low distribution losses, and low first cost in feeder copper.

When manually-operated substations are installed one of the principal factors determining their locations has been the problem of attendance, and expenses thus involved. Large-capacity units have been placed at centrally located points with resulting heavy, costly feeders radiating to the various load centers at or near the workings. In some instances, small and average size substations have been placed near a hoist, fan or shop where occasional attention can be given by someone employed for other duties. The increasing difficulty of securing, for a reasonable wage, capable attendants willing to live in isolated lonely districts has contributed materially to the present practice of concentrated capacity at centrally located readily accessible points. Such practice has often adversely affected service and is responsible for high distribution losses as well as poor voltage at the points of power consumption, it being economically impractical to compensate for excessive line drop by the installation of copper.

DIFFICULT TO DEMONSTRATE EFFECT

It is difficult to show, in a concrete manner, the effect of low voltage on mine output and on equipment maintenance costs. Operating expense is increased and mine output is curtailed by the slowing up of motors because of low voltage at the point of power consumption. The effect on the locomotive and other motor equipment shows itself chiefly in high maintenance costs caused by overheating and ultimate roasting out of armature windings. This is true even in the case of traction motors, which must operate a large percentage of the time even



A Two-Unit Outfit

These machines, located in the same substation, are completely controlled by automatic equipment. Either or both may be run at a time thus fitting the converting capacity to the load requirements.

though the current per motor may not be affected appreciably.

The development of the automatic substation, with its consequent elimination of attendance is making it possible to install small conversion units at or near the load centers, thus securing high average operating voltage, low distribution losses, and the economic advantages of automatically controlled non-attended stations. The elimination of attendance greatly simplifies the problem and permits locating the substations at points determined by the engineering difficulties involved.

The general improvement in operation and possible saving due to increased voltage and decreased copper losses are factors none the less important because they are difficult to evaluate. Consequently, they should be given due consideration in any analysis. The most evident saving and an important factor in favor of automatic substations will be found in the elimination of much labor expense. The magnitude of this saving will vary with the number of operators replaced, which also depends largely upon the number of shifts and other local conditions. The additional cost of equipment for automatic operation, in most cases, can be justified by the savings made in labor alone, except in cases where the operator may devote part of his time to other duties. Even then partial automatic control will usually show an advantage through the increased efficiency of the attendant in the performance of his other duties. In a number of installations, such as extension of present workings, the higher cost of automatic switching equipment located at the load center can be justified by obviating the necessity of increasing the feeder copper required to conduct the added power to the point of consumption.

AVOIDS EXPENSIVE MAJOR REPAIRS

It is the general impression that the maintenance costs incurred through automatic operation are higher than under manual operation. For groups of automatic stations, where systematic inspection is the rule, as it must be for satisfactory performance, experience has shown that the cost of maintenance, including inspection is seldom greater and frequently less than in the case of manual equipment. The explanation is found in the careful, systematic inspection by more competent men, so that defects are discovered and corrected before becoming serious, expensive major repairs being thus avoided.

The initial cost of automatic substation equipment is inherently greater than for comparable manually operated equipment. It will range from approximately 30 to 50 per cent more for motor generator stations and 60 to 80 per cent more for synchronous converter stations, depending upon size and voltage. The difference for partial automatic stations will vary from a few per cent to as much as 20 or 25 per cent more depending upon the degree of automatic protection. There should be no great difference in the cost of buildings for housing manual or automatic equipment. As a matter of fact buildings for the latter type of apparatus should be cheaper since they can be smaller and simpler. However, this will be partially or wholly balanced by the tendency, under manual operation, to group apparatus to a greater extent, thus reducing somewhat the building cost per kilowatt of output. The cost of installation will favor the manually operated apparatus to a certain degree but no great difference is possible and this item is a comparatively small part of the total. On the whole

it will be found that the difference in capital cost of the apparatus will be the only advantage inherent to the manually controlled substation. The saving in attendance expense, distribution losses and other items mentioned is such that in most cases the entire cost of the automatic installation will be earned in a few years.

In a number of instances manually-operated equipment has been changed over for automatic service. Usually this has been accompanied by splitting up multiple unit stations and relocating apparatus so as to realize the full advantages of the new arrangement. The greatest number of installations have been, and probably will continue to be, of new apparatus to provide for the advance of the mine workings. The advantage of single unit stations is evidenced by the predominance of this type.

UNITS USUALLY OF SMALL CAPACITY

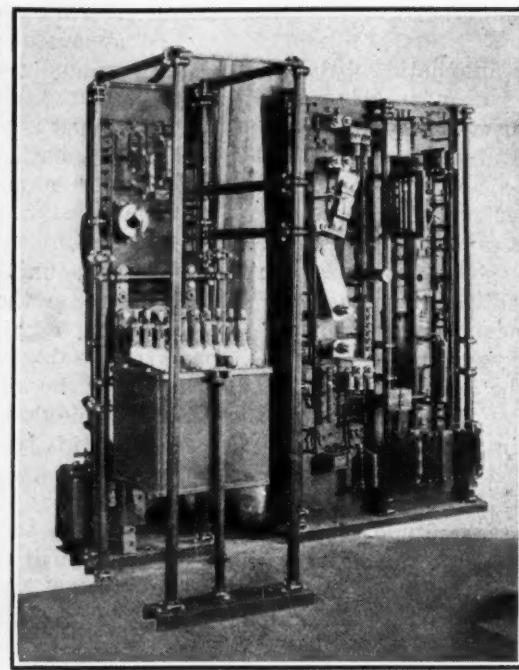
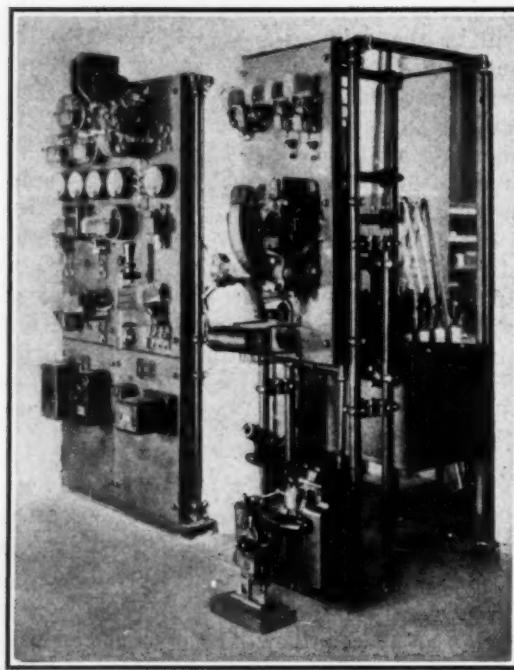
The units comprising mining substations are usually of small capacity, commonly ranging in size from 100 to 300 kw., though occasionally exceptional cases may justify 500- or even 750-kw. capacities. The power requirements of the average new development can usually be supplied by a single small unit, with good practice dictating the installation of duplicate apparatus as insurance against breakdowns. With expansion of the workings and growth of the power demand, the logical tendency has been to gradually add new units and this, under manual operation, has resulted in the grouping of a number of machines in a few substations.

Automatic control renders it economically possible to distribute the substation capacity in units of relatively small size, that may be located advantageously with respect to the load centers, so that each will feed a small area and satisfactory voltage can be maintained with a minimum amount of copper. The application of automatic control to multiple-unit stations may prove advantageous from the operating standpoint but the saving in attendance expense is less attractive and the full possibilities of automatic operation cannot be realized.

TREND IS TOWARD SMALL STATIONS

A better understanding of automatic substation application seems to be evidenced by the present decided tendency toward small single-unit stations. The load demand of the typical mine is greatest during the day, the night load being much reduced, since cutting is about the only work then performed. Division of the substation capacity into relatively small units gives better assurance of uninterrupted service and results in an important reduction of power losses during this prolonged light-load period, since with this arrangement a greater proportion of the machines can be shut down than if large units were installed. Well located single unit stations are as effective in reducing the light load losses as though the machines of similar size were grouped, comparable results being achieved by taking individual stations out of service during light load periods.

Railway and mining load characteristics are quite similar but the fluctuations of the latter are wider and more rapid. It is more difficult to secure a satisfactory plant factor for a mining substation and for this reason, as well as economy of investment, the machines are usually worked to the limit. The conditions under which the mining trolley system must be operated and maintained make the occurrence of frequent short circuits



Front and Rear Views

Units built like these greatly reduce installation costs and make it readily possible to change manual stations to automatic operation, thus enabling reductions to be made in operating costs.

almost unavoidable. This imposes additional severe duty and the apparatus must be exceptionally rugged to remain in service for any length of time. The effects of these severe conditions will be minimized under automatic operation because the protective features are prompt and positive in performing their duty. Service is maintained under all conditions except those involving real hazard to the apparatus.

It is difficult to make a general statement as to whether motor-generator sets or synchronous converters should be installed in a given substation, without first making a complete study of the conditions under which the equipment is to operate. Certain applications are ideal for synchronous converters while others indicate clearly that motor-generator sets would be more reliable and that their over-all operating efficiency would be higher.

Motor-generator sets should be used at the end of a long transmission line where line regulation is poor or the voltage is subject to fluctuations caused by switching operations. However, the character of the alternating-current supply under present-day conditions, because of interconnection and general improvement in service standards, is such that there are now less frequent occasions to question the use of the synchronous converter on that score. Wide frequency variation, severe line surges and excessive voltage drop are uncommon yet if experienced they render the application of any synchronous equipment unwise.

In general the comparison between synchronous converters and motor-generator sets together with automatic switching equipment, with respect to first cost, over-all efficiency and space requirements, should be made on the basis of converters with step-down transformers and motor-generator sets for direct connection to the transmission line. The motors of the motor-generator sets are wound for 2,200, 4,000, or 6,600 volts; 2,200 volts being the most common in mining districts. On a direct comparison, the first cost of the synchronous converter and transformer together with automatic switching equipment is greater than that of the comparable motor generator equipment, but the over-all

efficiency of the synchronous converter is higher, the difference being approximately 5 to 7 per cent at full load and increasingly higher at light loads. Space requirements nevertheless, favor the motor-generator set.

The inherent design characteristics of the synchronous converter and motor generator are such as to give the latter a decided advantage in ability to commutate successfully heavy repeated overloads and short circuits. Service involving high load peaks at frequent intervals is adverse to best converter performance and can be continued indefinitely only at considerable extra maintenance on the current-collecting parts. Frequent short circuits make conditions worse, especially if flashovers result. The possibility of a flash-over is unquestionably greater for the converter than for the motor generator. By the use of proper values of resistance incorporated in the feeder before tying to the trolley, the possibility of a flash-over of either motor generator or synchronous converter can be reduced to a minimum, thus tending to eradicate the difference between the converter and motor-generator set on that score.

AVERAGE LOAD CONDITIONS ARE SEVERE

The load conditions of the average mine are severe, and usually demand the full commutating ability of a unit to accelerate loaded locomotives. The predominance of the motor generator in the mining industry points clearly to its adaptability for such severe service. However, the converter may be satisfactorily applied in numerous instances as shown by the satisfactory performance of many units now in use. In applications where the capacity of the conversion unit is not determined by its ability to commutate the starting current of the largest locomotive, or possibly combination of locomotives, but is determined by the effective heating or load current over a given period, the synchronous converter is applicable and desirable from the efficiency standpoint, having higher partial and full load efficiencies. Aside from these operating factors, the synchronous motor generator, when equipped for complete automatic control, has a considerable advantage in first cost over a similar converter installation. The differ-

ence in first cost may in some instances be wiped out if the additional power losses are capitalized, as they should be, to place the units on a comparable basis.

The inclusion of power factor clauses in the power contracts of central station companies is becoming quite common and the practice undoubtedly will be general in a few years. The total mine load, exclusive of substations but including such equipment as fans, hoists, pumps, etc., is usually of rather low power factor. In considering possible reductions in power bills the customer will generally find an incentive to maintain good power factor.

SYNCHRONOUS GENERATOR IS EFFECTIVE

The synchronous motor generator offers a simple and inexpensive means of securing appreciable corrective effect because the synchronous motor may be operated at leading power factor to balance the lagging factor of induction type fan motors, and similar equipment. Frequently it will be found that the cost of the higher conversion losses of such a set is more than balanced by the saving effected through improved power factor. The predominance of the synchronous motor generator in mining service undoubtedly arises from its operating characteristics and its usefulness as a means of obtaining power factor correction. At the same time it should be borne in mind that the approximately unity power factor load of the synchronous converter will exert a large corrective influence which in many cases will be found adequate.

Occasionally multiple unit automatically controlled substations may be used advantageously. Stations of this type sometimes require special control features in order to insure satisfactory parallel operation of the units. The voltage of a generator may build up to a considerably higher value when the field windings are cold than when hot. A cold unit, paralleled with one already running, will tend to take all the load and may cause shut down of the hot machine by reverse current. The degree of unbalance will be influenced largely by the temperature difference of the field windings and the minimum value of the load.

SUCCESSFUL PARALLELING USUALLY POSSIBLE

For usual operating conditions, where the load fluctuations are not highly variable and there are few intervals of extremely light load, successful paralleling should be possible even though temporarily the division of the load may be unequal. Careful analysis is necessary where over-compounded generators are to be paralleled, but with shunt or under-compounded units this is not so important. It is advisable to avoid the complications and expense necessary to provide means for proportional load division under all conditions. Methods of securing load division at all times are available and can be applied when necessary. It is seldom that objectionable unbalancing will be experienced with synchronous converters as the direct-current voltages of hot and cold units cannot differ greatly and the characteristics of the machines are somewhat drooping even when of the compound-wound type.

With automatic, as with manual control, consideration must be given to possible difficulties due to parallel operation through the trolley. The resistance between stations must be made sufficiently high to insure satisfactory division of the load. Unless this is done "pumping" between stations may result. Temperature dif-

ference of the fields of machines in different stations would tend to aggravate this trouble. Usually there will be considerable load and resistance between stations so that a drooping system characteristic will result and slight voltage differences will be relatively unimportant. Generators should be so compounded that the system will have a drooping voltage characteristic otherwise adjustments are necessary when this requirement is not met. The usual purpose of over-compounding is to compensate for voltage drop in the distribution system. For layouts with low resistance between stations shunt or under-compounded units in general will maintain satisfactory voltage at load centers and insure satisfactory operation.

Whenever parallel operation is involved, whether on the same bus or through the trolley, each control unit must include a polarity relay to insure that the polarity is correct before the machine is automatically connected to the line. Reverse-current protection also is essential to prevent motoring from the direct current end in the event that the direct-current bus voltage becomes higher than the machine voltage.

Follow Aristotle, Exhorts Gandy

The old-time notion was that the business man should zealously guard every piece of information concerning his business. Not until the last few years has there been anything like a free interchange of information between business men. Today, however, the man in business is professing an appreciation of the philosophy of Aristotle and the natural result is the growth of intelligent competition. As regards statistical information in the bituminous industry, there has been marked progress, both in the several fields and as between the several fields. I anticipate continued development along this line within the next few years. This will be helpful in the marketing of the product. There are other encouraging trends in marketing which are big in promise.—*Harry L. Gandy, at meeting of Cincinnati Chamber of Commerce.*

Coal Bed Irregular in Shape



No. 7, the New Drift of the Cinderella Mine

This mine is operated by the Sycamore Coal Co. It is in the Winifrede seam, near Williamson, W. Va. The coal bed lies close to the top of the mountain and consequently is highly irregular in shape. Here the haulway comes out of one hill, runs across the course of a narrow gap or ravine and goes into the next hill. The Cinderella mine has a capacity of approximately 32,000 tons per month.

Men and Women of the Mines

X—Oh Doctor, Doctor

By H. S. Geismer
Birmingham, Ala.

Dr. B— obtained his appointment as camp physician because he received a majority of the votes at an election held for the purpose of giving all employees a chance to express their preference on the doctor question. The superintendent had ruled that since the doctor was paid through a check-off that took toll from all employees they should have the right to name the doctor. Secretly the superintendent hoped that the scheme would put an end to the constant complaints from the employees about the treatment or rather lack of treatment furnished by the camp physicians.

All of the applicants for the position had been informed that they would be required to furnish all medicines without charge but they would be allowed special fees for obstetric cases. Each married man on the roll paid \$1 and the single men 75c. monthly so the regular check-off for the doctor could be expected to amount to approximately \$400 per month. Another understanding was that the appointment should be for a term of two years.

DOCTOR FINDS POPULARITY COSTLY

Dr. B— was very popular at first, in fact he concluded that he was too popular. He was being sent for too often and his drug bill was eating up his collections.

Shortly after he came to that conclusion the boys for good and sufficient reasons nicknamed him "Dr. Castor Oil." Like Mussolini he bought it in great quantities but unlike the Italian statesman he prescribed it for friend as well as enemy. If a patient objected to the dose he assumed an injured air and assured the patient that his judgments must not be questioned.

Dr. B— would not have been chosen camp physician if the choice had rested with the superintendent, in fact that worthy considered him the least promising of all of the applicants. It turned out, however, that from the company standpoint Dr. B— was the most satisfactory physician the camp had ever had.

CASTOR OIL SHRINKS SICK LIST

After the people on the doctor list began to realize that the doctor was entirely serious about his fixed rule to start all treatments with castor oil they considered twice—or possibly three times—before they put themselves under his care and as a result absenteeism from work because of sickness (fortified with certificates from the doctor) was reduced considerably.

This also had a direct bearing on the noticeable reduction in trivial damage suits filed by employees since the testimony of a physician was the first thing asked for by the damage suit lawyers.

Dr. B— possessed considerable skill as a surgeon and because he had more time to devote to surgical cases than his predecessors had had he got men back to work more quickly, following accidents, than had been the rule; that also was of considerable advantage to the company.

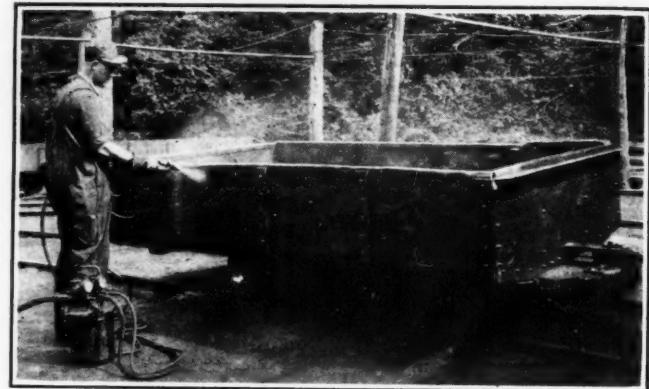
Many of the wives in the camp became great boosters for the "Doc," as they called him; he kept their "old men" at work.

After a time some of the men began to complain to

the superintendent about the doctor but because these men were the very ones who had insisted that the company ought to allow the employees to choose their own physician, he was able to give them stones in place of the bread they expected to receive and for once the superintendent saw them swallow the stones without a murmur. His parting shot to such grumbler usually was, "probably next time we will let the women elect the camp doctor."

Paint Preserves Body of Mine Cars Whether They Be Wood or Steel

Evidence that paint preserves the body of rolling stock is reflected by the meticulous care with which the railroads apply it to this type of equipment, using spray guns for the purpose. The practice is slowly but surely being adopted by coal companies because thereby the life of a mine-car body, regardless of whether it be wood



Applying Paint to Mine Car by Spray Gun

In the old days the body of a mine car was allowed to rot or rust until it fell to pieces. Now, the tendency is to protect them against atmospheric agents of destruction by the application of paint. The spray gun makes easy an otherwise difficult job.

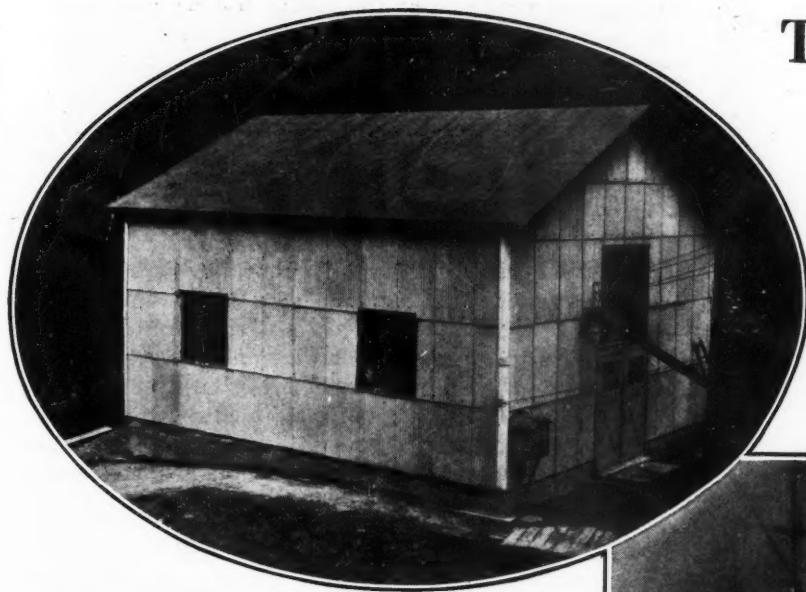
or ordinary mild steel (which is not acid-resisting) can be considerably increased.

In the accompanying illustration a man is seen using a Binks Spray Equipment Co. outfit on a 3-ton steel car at the Derby mine of the Stonega Coke & Coal Co., Virginia. The body is painted inside and out in about 15 min., and each car is thus treated periodically, usually before being put back into service after receiving repairs.

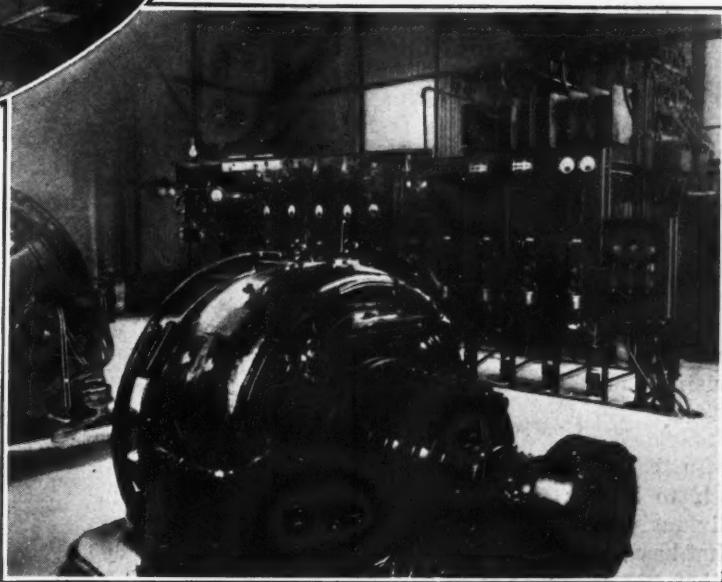
This practice is also followed at the Valier mine of the Valier Coal Co., in Illinois. At this mine, however, the cars are of wood and of 5-ton capacity. They are painted as a protection from rot and also to prevent the absorption of water in the rotary dump over which is located a water spray. By means of a spray outfit one man will paint the inside and outside of 20 of these cars in 8 hours.

IN GREAT BRITAIN about 250,000 miners monopolize more than 90 per cent of all compensation claims for industrial diseases. First and foremost is nystagmus, a disease fortunately unknown in America, which is followed in the order named by localized blood poisoning at the knee, the hand, and by inflammation over the elbow and at the wrist. These four diseases result from posture at work and from the careless use of picks.—Dr. Edgar L. Collis, in a lecture at the Carnegie Institute of Technology.

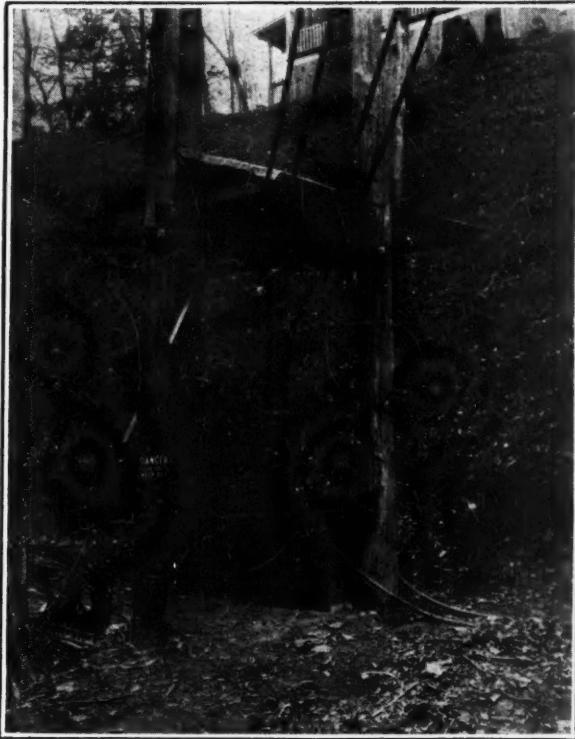
Two-Mine Substation At Island Creek



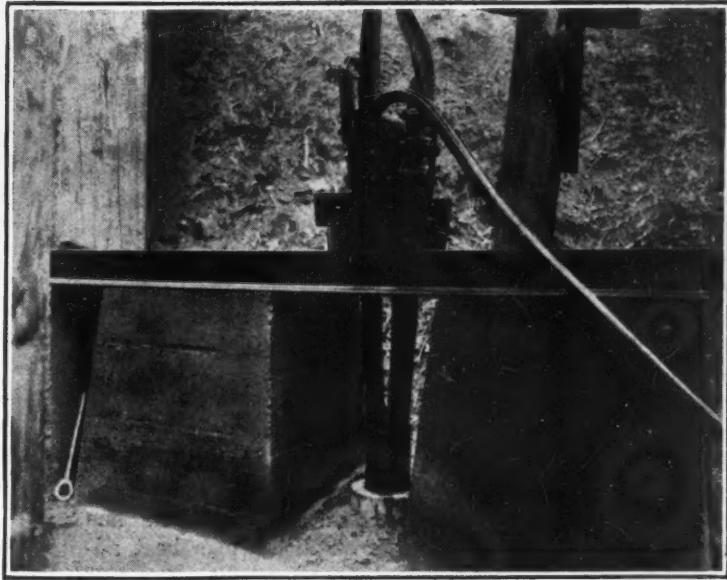
(Above) Steel-framed substation building covered with asbestos siding and heat-insulated roof. The site was almost inaccessible and all material and equipment had to be dragged to place.



(Above) Interior of the substation building. Three rotary converters that had been used elsewhere are ranged along one wall and the transformers along the other.



(Above) Feeders entering 380-ft. borehole. The negative conductors are weatherproofed; the positive cables are lead sheathed and armored.



(Right) Details of cable suspension. The armored conductors are held by manufacturers' fittings: the weatherproofed cables by forged clamps.

Hard Sense, Midnight Oil, Cheeriness And Getting a Raise

By Neill Hutchings
Birmingham, Ala.

Practically all men, in all lines of endeavor, are always interested in bettering their financial condition. Periodically most of us feel that we are entitled to at least an increase in remuneration, if not to promotion in position and responsibility. It frequently happens that such recognition is not forthcoming. Under such circumstances, many men bitterly complain about the unjust treatment that they have received and recount the many reasons why they are fully entitled to a substantial increase in salary. The valuation that most individuals place upon their own services, however, is usually much higher than that placed upon them by their employers.

What is the reason for this condition? In the vast majority of cases it arises from a failure to use common sense. That is, either the person has done nothing to honestly merit an increase in remuneration, or—and this case is rare—the real value of the service rendered is not appreciated by the employer. This latter contingency is a case of poor "selling" on the part of the employee. On the other hand, but rarely, it may arise from a lack of a sense of fair play on the part of the employer, or his ignorance of the fundamentals of good business management.

COMMON SENSE AND ITS USE

In the former case the employee has no one but himself to blame; in the latter rare contingency the individual must so improve and increase his usefulness that he can obtain, either from his present or from some other employer who appreciates his work and recognizes its true value, the rate of compensation that he considers his just due. All of this can be summed up in the words: "If I want a raise I must use my common sense."

To this end, the man who desires an increase in salary should study and apply the following "rule of three."

1. He must consider the men ahead—those from whom he now takes orders and whose positions he eventually hopes to occupy. They may not be his ideals either as men or as officials, but they must possess ability or they could not retain their positions. Their methods and principles of working, how they reason and plan, their mental processes whereby they arrive at decisions, should be carefully and sincerely studied. The man who does not study those above him, those who can teach him much if he will but give them a chance, is "passing up" one important way of preparing himself for a raise.

2. The chief end and aim of most companies is to turn out as large a quantity of good product as possible. This must be done as cheaply as possible—the payment of good wages and salaries and the maintenance of satisfactory working and living conditions is a foregone conclusion. The ambitious man should ask himself the question, "Have I devoted any brain power or night work to aid my employers in attaining their goal? Have I done any more than my own little job during working hours, quitting the moment the whistle blew?" If he cannot answer these questions satisfactorily, he has not been using his common sense to his own best ad-

vantage, and will not get a raise except by accident. Unless he gives more than value received in exchange for his pay envelope, he does not deserve increased remuneration. For a man to do no more than that for which he is paid is *prima facie* evidence that he is not really and truly interested in increased financial recognition.

3. The third qualification for advancement is personality, or disposition. Again the aspirant for preferment should catechize himself, this time, however, somewhat as follows: "What kind of a disposition have I? Am I trying to improve it? Am I cheerful or morose? Do I speak to others first, or wait until they notice me? Do I ordinarily do only those things that I like to do? Regardless of my own personal inclinations, do I always co-operate with others?" If he can answer these questions satisfactorily he is using his common sense; if not, it is lacking.

THE MIXER MOVES UPWARD

Not long ago a certain man received a promotion both in rank and in salary. So far as the practical side of the job in question was concerned, another man possessed even greater ability than the one who stepped ahead. The man promoted, however, possessed the ability of getting along with men, and this quality was needed in that particular job. One interesting point for consideration in this regard was the fact that the man who now possessed this faculty had acquired it through practice, for only a few years before it was entirely lacking from his makeup.

Industrial executives will agree that the most valuable attribute they can discover in one of their employees is a good disposition—one that is both responsive and co-operative, one that both receives and executes orders and instructions cheerfully, one that understands other men of all ranks, and knows how to give as well as receive. A small book entitled "Human Chemicals," by Thomas Dreier, that can be read in about ten minutes, contains much information on this general subject, and is easy to understand and assimilate.

THREE SIGNPOSTS TO SUCCESS

All of the foregoing may be summed up in three short rules that can be easily remembered and kept in mind at all times. Thus, he who would win promotion must, first, study the men ahead, second, contribute his best efforts to the good of his employer, and third, acquire a disposition that will mark him as a leader of men.

Real bosses are never afraid that those under them may succeed to their positions. On the contrary, their chief fear is that these men will not or cannot rise to the occasion when it comes. As soon as any man has demonstrated his ability to fill a bigger and better position, he is already on his way to it.

THE FIRING of powdered coal has not advanced as rapidly in Germany as in the United States. The consumption of coal dust increased from 2,500,000 in 1925 to 4,000,000 tons in 1926. However, this does not even approach the limits of production capacity. Progress is reported in the development of the dust-fired locomotive and the dust-consuming Diesel engine. As in America, the problem of distilling coal dust is occupying the German scientist.

Motorizing Steam-Driven Fans Assures Reliability

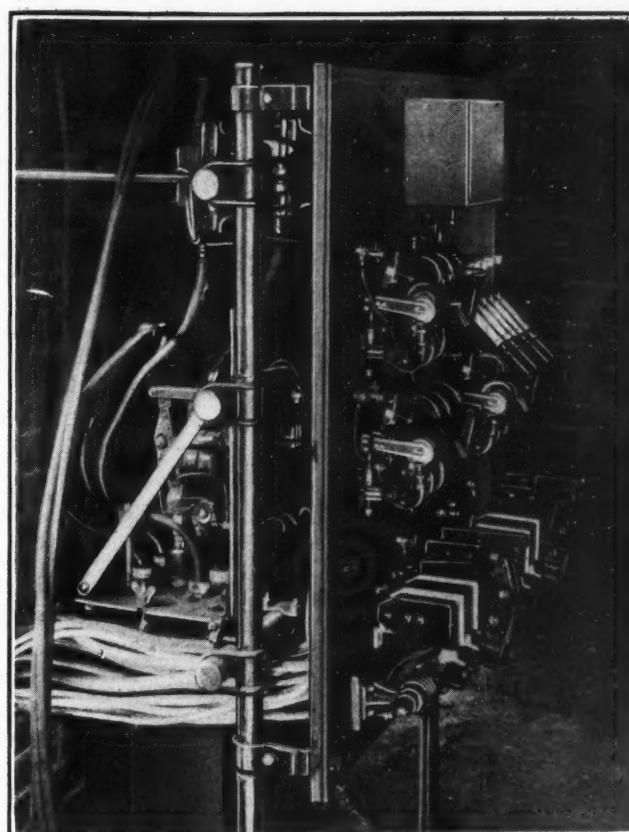
By J. C. Wilburn

Nashville, Tenn.

The West Kentucky Coal Co., of Sturgis, Ky., had a number of large steam-driven fans. Realizing the economies made possible by electric drive, the problem of belting these machines to slip-ring induction motors was considered. Inasmuch, however, as power was received over a long transmission line, it was deemed wise to retain the dependability of steam and so arrange both drives that a change could be made from one to the other without shutting down the fan or appreciably varying its speed.

In order to accomplish this result the use of two friction clutches was suggested. This would allow the engagement of either drive before the other had been disconnected and it would be unnecessary to have absolutely identical speeds at the time engagement was begun. The problem was further complicated because the fans were already installed and running and could be shut down for only short periods at a time. Keeping in mind the necessity for quick installation, the merits of several types of clutches were considered and finally a split band friction type was selected for the engine side of the fan. This clutch, made by the Falls' Clutch & Machinery Co., Cuyahoga, Ohio, consists of internal and external wooden friction shoes bearing on a cast-iron wheel. Being a split clutch it was comparatively easy to install it by cutting the drive-shaft between the engine and the fan, keyseating upon either side of this cut and bolting the clutch hubs to the shaft without otherwise disturbing it.

To attach the motor it was decided to extend the fan-shaft on the end opposite the engine and to make this extension long enough to keep the motor drive out of the airway of the fan. Since the shaft did not extend beyond the fan bearing on that end, it was necessary



Automatic Speed-Varying Control

Control of the variable-speed motor is comparatively simple. Note the five knife switches on the farther end of this panel. Each of these has the corresponding speed of the fan marked below it so that the desired speed may be selected at will. This gives a total of six different speeds with automatic acceleration for each.

to substitute a shorter bearing which would permit the shaft to project sufficiently to allow for the hub of a split friction clutch. This hub was made extra long in order to keep the clutch at a safe distance from the fan-bearing pedestal.

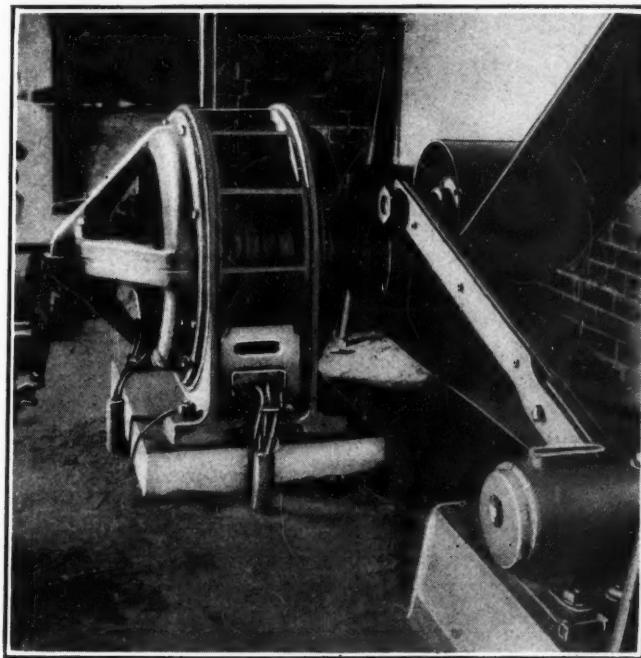
Inasmuch as a part of the space in the airway was needed for a bearing and pedestal for the shaft extension, a disc or steel-plate friction clutch was selected for installation at this point. This clutch, made by the Webster Mfg. Co., Chicago, Ill., occupies but small space and allows ample room for the shaft bearing and its support.

EXTENSION CARRIED THROUGH BRICK WALL

The shaft extension was carried through the brick wall of the airway, through a drive pulley and terminated in another bearing inside the motor house. Split cast-iron collars were used to maintain the lateral position of the shaft.

The electric drive consists of a 100-hp., 600-r.p.m., 2,300-volt, 3-phase, 60-cycle, slip-ring General Electric motor with an adjustable speed control equipment suitable for 50 per cent speed reduction. The control panel is of special type arranged for adjustable speed control with suitable resistance for continuous running at the desired speed.

It consists of an oil switch and five electrically-interlocked contactors the closing of which shunts out various amounts of resistance across the rings of the motor and provides six different speeds at which the machine may run. Each contactor is held closed by means of a coil having a knife switch in its circuit. Thus there are five knife switches mounted on the panel. If all these



Motor and Short Belt

This motor has six different speeds between half and full speed. Although the belt is short the wrapping action of the idler is such that full power may be transmitted. The fan pulley is provided with a clutch permitting a change from steam to electric drive or vice versa to be made within a few minutes.

are closed and the motor is started it will automatically accelerate to full speed, the contactors closing in succession by means of definite time-limit, magnetic relays. The opening of one of these five switches will break the holding-coil circuit in which it is connected as well as the circuits of all succeeding contactors, causing the motor to run at partial speed. If all five switches are open the motor will operate at half speed. Thus a selection of six speeds from half to full is possible, depending upon the number of switches that are closed. The corresponding speed of the fan is indicated under each switch so that the desired rapidity of rotation can be had by closing all the switches below that speed and opening those above.

The panel is arranged for automatic restart and acceleration to the selected speed following the return of power after loss of voltage. If the line is de-energized the motor of course will stop, but it will automatically restart the moment power is restored.

OPEN SWITCH OPENS ACCELERATORS

If any switch is opened while the motor is running, all the accelerating contactors of higher speed will open. If this switch is then immediately reclosed these contactors will close in succession and within a definite time as in starting, even though the motor has not slowed down appreciably. In other words any opening or closing of speed-changing switches cannot cause improper closure of any contactor as these are all electrically interlocked and must close in proper sequence.

The motor is connected through a leather belt to the driving pulley of the fan. But this connection differs somewhat from that ordinarily used as a comparatively short belt is employed. The distance from center to center of the motor and driven shafts is only 10 ft. 4 in. The driving and driven pulley diameters are 22 and 80 in. respectively.

Of course a belt contactor or tightening idler is employed. This pulley is set with its face approximately 2 in. from that of the motor pulley. It rotates upon a spindle equipped with ball bearings. The complete rig is attached to a steel bar that is hinged to the floor through a cast-iron, babbitt-lined floor bearing. The pulley-wrapping action on the belt is secured through the weight of the idler and its supporting steel bar. This forms an effective friction device, inexpensive to construct and install and unusually easy to get at in case repairs become necessary. No external weights, springs or other devices are required. The idler weight is sufficient to give the proper belt tension for normal load but is such that slipping of the belt is permitted in case of overloads or of too rapid a rate of motor acceleration.

Geological Survey Appraisal Praised By Secretary Work

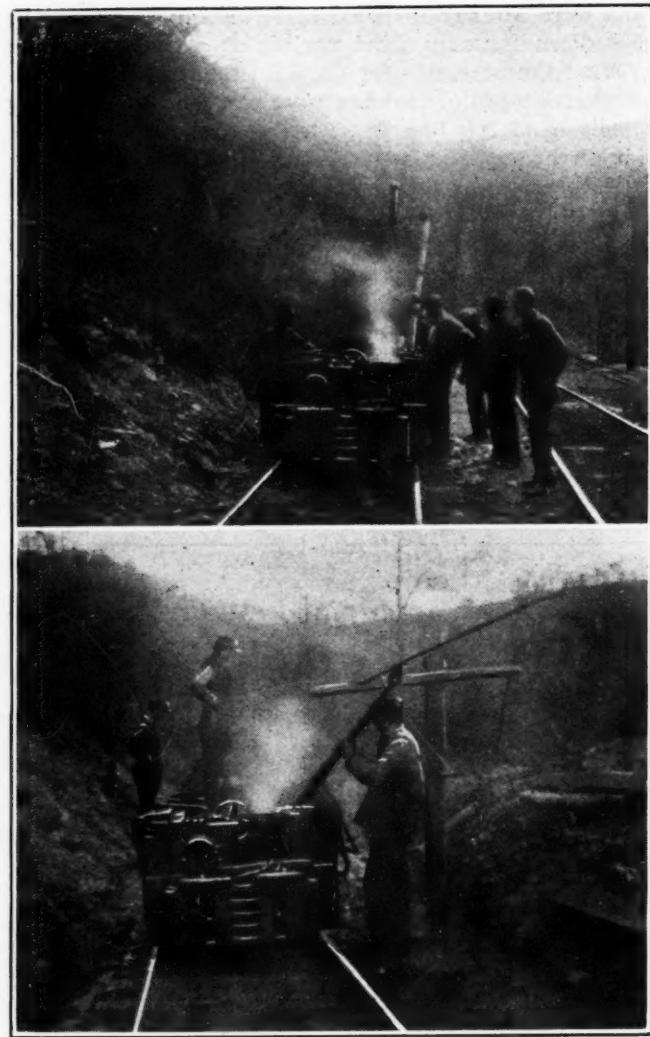
An example of intelligent supervision of the public domain may be found in the work of the Geological Survey in classifying or appraising public lands according to their content and value. Attempts at land classification were begun a century and a quarter ago, but only within recent years has the effort been systematic and continuous. The Geological Survey undertook detailed land classification in 1906, when it discovered that valuable coal lands had been obtained under the guise of agricultural entries.

Explosives Makers Commend Dr. Munroe

In recognition of his long and active career in the study of the technology of explosives, the Institute of Makers of Explosives recently requested Dr. Charles E. Munroe chief explosives chemist, Bureau of Mines, to prepare the introduction to the "History of the Explosives Industry in America," which is shortly to be published by the Institute. In appreciation of his aid the Institute has adopted the following resolution:

"Whereas, Dr. Charles E. Munroe, the eminent explosive expert whose reputation in and knowledge of the manufacture and use of explosives is unsurpassed, has taken his valuable time to write an introduction to the History of the Explosives Industry in America;

"Now, therefore, be it resolved, that the Institute of Makers of Explosives extends its unmeasured thanks to Dr. Munroe for the service he has rendered in writing such introduction, and its profound appreciation of the honor of having such a world-renowned expert undertake this task on its behalf."

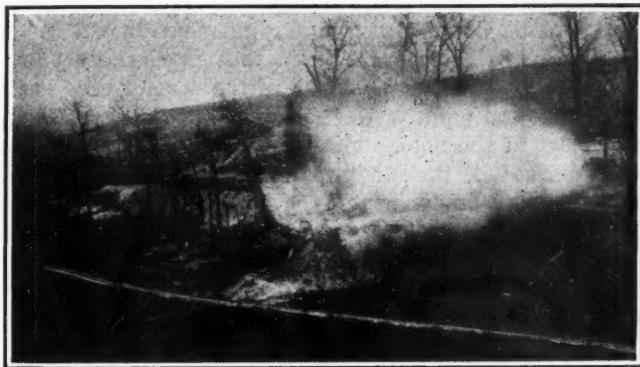


Haulage Delayed by Lack of Tools

Recently a 15-ton haulage locomotive which was pulling an empty trip on a long outside tramroad, was halted because a motor field coil grounded and set fire to the insulation. No fire extinguisher was available and moreover the handhole cover of the motor could not be opened because no wrench was carried on the locomotive. The insulation continued to burn while the motorman ran to call an electrician. The incident emphasized the need for carrying a few tools and a suitable fire extinguisher on each locomotive. The upper photograph was snapped after the electrician had "cut out" the damaged motor and was about to run the locomotive to a side track. The lower one shows the locomotive on a side track. The insulation is still smoking, and the electrician decides that the locomotive will have to go to the shop for new fields and perhaps an armature.

Explosion Test Conducted by Bureau In Federal Experimental Mine

This test was conducted by the Bureau for the benefit of members of the Coal Mining Institute of America who visited the experimental mine on Dec. 10 last. The film was exposed one second and the lens of the camera was opened the instant flame and smoke began to emerge from the mine portal. As indicated by the limited extent of the smoke cloud developed in one



Deadening Effect of Rock Dust

This one-second exposure shows the small amount of smoke and flame issuing from the portal of the experimental mine at Bruceton, Pa., when a coal-dust zone near the mouth of the mine is backed by a stretch of clean heading and that by a stretch that is heavily rock dusted is exploded by a blown-out shot.

second, this explosion was not nearly so violent as others that have been conducted by the Bureau.

The explosion was conducted as follows: "Eight hundred pounds of coal dust was distributed over 400 ft. of entry, beginning at the portal. The next 100 ft. of entry was clean and dustless but beyond this stretch inby for a distance of 750 ft. rock dust was applied



Field-Sample Test of Permissible Explosive

In the gallery at the federal experimental mine, Bruceton, Pa., field samples of permissible explosives gathered at operating mines, are constantly being tested to determine whether the explosive sold to the coal company and to the miner measures up to the requirements of the Bureau.

at the rate of 5 lb. per ft. The explosion was initiated by a blown-out shot located 180 ft. from the portal of the main entry."

The purpose of this test was to show how far the flame would penetrate into the rock-dust zone. Recording instruments registered the fact that the flame in this case penetrated this zone for a distance of 600 ft. In a previous test, under exactly the same conditions except that no rock dust was present, the flame traveled 1,200 ft. inby the coal-dust zone. This comparison of results, which were recorded with exactness, proves con-

clusively the efficiency of rock dust in combating the ignition of coal dust. Incidentally, at the beginning of the rock-dust zone the speed of the explosion was 3,000 ft. per second and the pressure exerted was 78 lb. per square inch.

Small Savings Count

The launder attachment to the regular table here illustrated seems to do a perfect job on the middlings. With it a wide band of middlings is taken from the table and nothing returned for rewashing. The mine

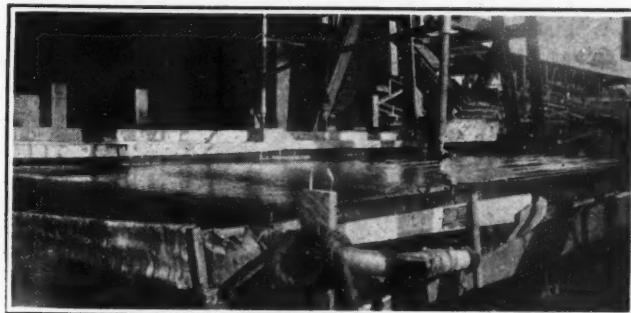


Fig. 1—Five Tons per Day Gained

The savings effected by this table are not large, but then neither is the investment. The construction of the launder is simple and the cost is low. The launder shown in detail in Fig. 2 can be seen to the right of the above table.

production is 800 tons per day. The through- $\frac{1}{2}$ in. coal is washed on the table shown in the accompanying illustration, and the larger size in jigs. M. F. Sparks, superintendent of the mine, states that the simple launder attachment to the table is recovering 5 tons of

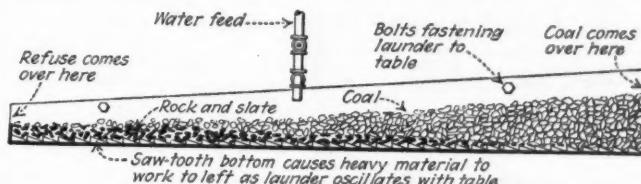


Fig. 2—Simple but Effective Launder

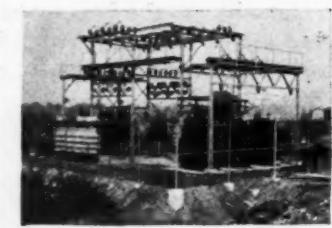
This launder oscillating with the table effectively handles the middlings discharged from it, thus increasing the percentage of total recovery.

coal per day that formerly went to the refuse pile. In other words, the owners formerly secured 25 tons of coal per day from the table, but now they get 30 tons.

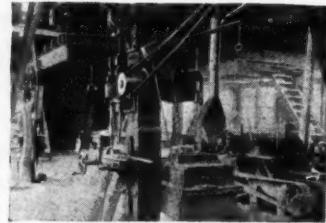


A Lesson in Centralized Operation

This 30x30-ft. brick building houses the car repair and blacksmith shop, and mine superintendent's office for an operation that is producing 3,500 tons per day. In the background is the tipple of the mine—the Island Creek Coal Co.'s No. 21. Good tracks, sturdy cars, no patch jobs in repairing equipment and paved roads to a central repair shop where all major work on easily-transported machines and part assemblies is done, are some of the main reasons for the little repairing done at the mine.

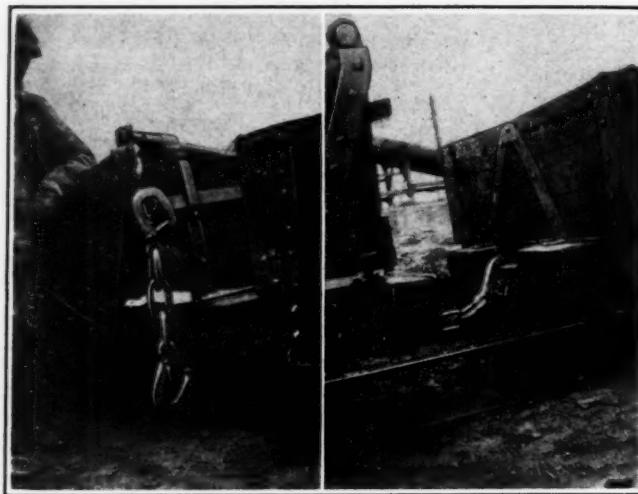


Practical Pointers For Electrical And Mechanical Men



Keeps Trip Together When Rope Slackens

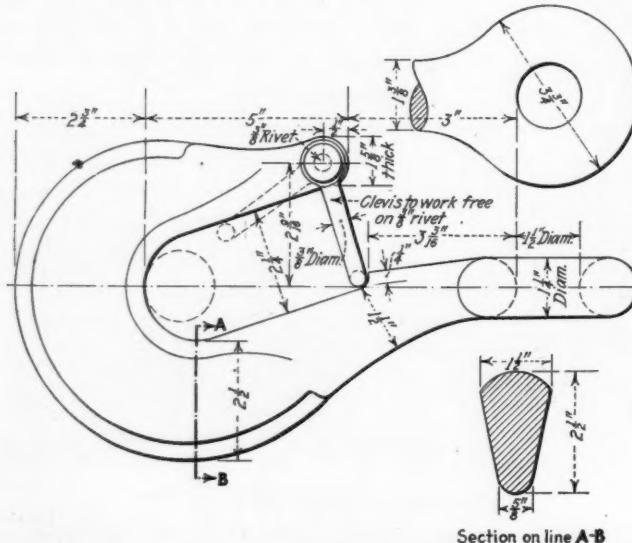
When a change of grade occurs on a slope or inclined plane and the rope becomes slack, the cars bump together and the hook of a coupling may get loose with disastrous



Ready for Insertion and Attached to Cars

The great danger where grades are unequal is that the couplings will unfasten and cars will be left behind. This coupling prevents that possibility, yet it is about as easy to handle as the standard type.

results, so the Wilkes-Barre Colliery Co. has devised a mine-car safety hook that can be slipped into the end of a drawbar expeditiously and, when there, a retaining clevis, attached to one or other arm of the hook slips across the opening and engages with the other side, turning the hook into an eye.

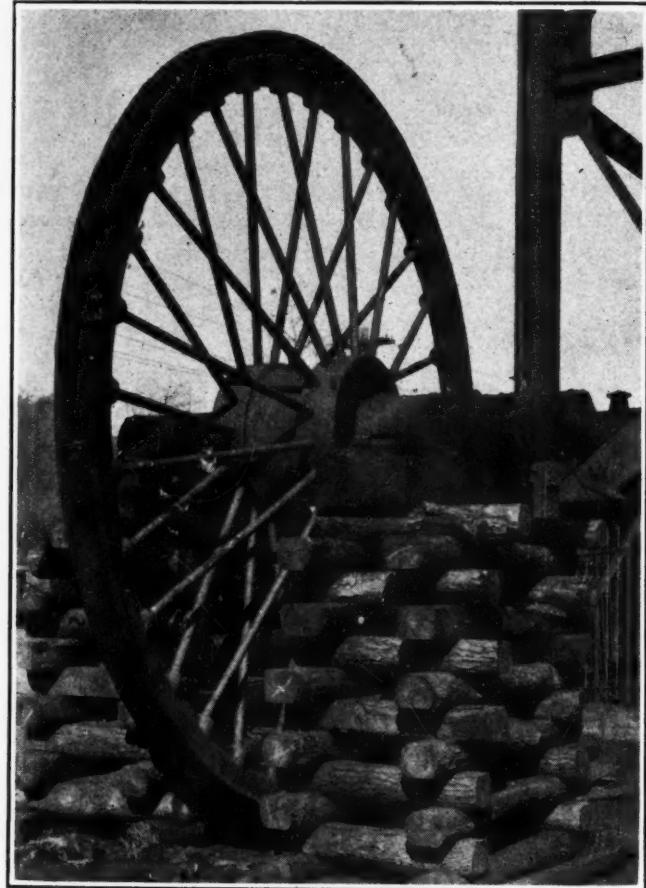


Traps Hook When Passed Through Drawbar

In this instance the clevis, or key, that closes the opening on the hook revolves about a rivet set in the point of the hook. This clevis can be moved inward by the coupler so as to permit him to uncouple the car.

It will be noted that the arrangement shown in the line drawing is different from that in the left photographic illustration, the clevis in the former case being pivoted to the point of the hook and in the latter case to that part of the hook opposite the point. The principle in either case is the same. The hook is made stout so as to resist any tendency to open out and thus defeat the purpose of the device by making the clevis too short to span the opening. This was one of the "Safety Kinks" that aroused much interest at J. J. Forbes' presentation on that subject at the National Safety Congress.

In This Way Alignment Is Preserved



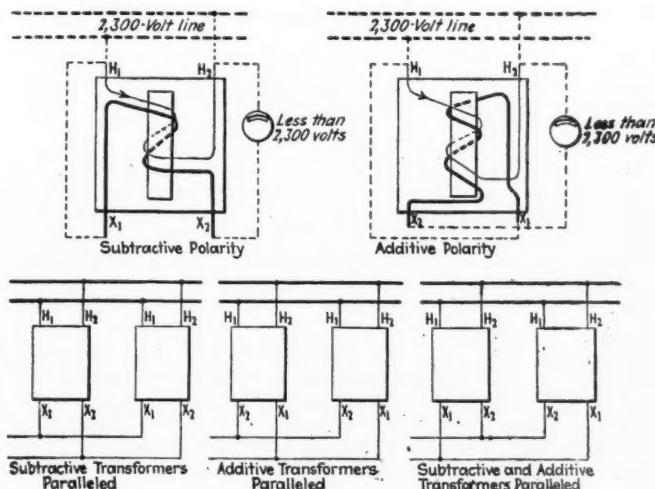
Keeping a Spare Hoist-Sheave True

Usually the changing of a hoist sheave is an emergency job, and, being such, every step to eliminate avoidable delays in this work should be taken. At the Harmar mine of the Consumers Mining Co. the spare sheave is stored at a point convenient to the headframe on which it will some day be installed. As shown in the accompanying illustration, the shaft of the sheave is supported in a normal position on cribs. In this position the alignment of the rim with respect to the shaft is maintained. When spare sheaves are stored flat on the ground, as they often are, they tend to "take a set" out of line due to the unbalanced distribution of the weight of the shaft acting on the rim when in this position. Note how the bearing surfaces of the shaft are preserved free of rust by the protective coverings of canvas which are soaked with oil.

Polarities Not the Same on All Makes Of Power Transformers

Once in a while transformers are encountered which bear on their name plates the words, "Additive Polarity," or "Subtractive Polarity." The meaning and reason of this designation is not clear to many of the electrical men who are concerned chiefly with maintenance work and seldom are called upon to install transformers.

The polarity of a transformer refers to the position relation of the high-voltage and low-voltage leads on the outside of the case, and it is usually necessary to take this polarity into consideration when transformers of



Lead Markings, Polarities, and Parallel Connections

Note that with either the subtractive or additive polarity the voltage between H_1 and X_2 , if H_1 and X_1 are connected, is less than the line voltage. The difference between subtractive and additive polarity transformers lies in the relative positions of the primary and secondary leads on the outside of the case.

different makes, or even sometimes those of the same make, are to be paralleled or connected together in a bank.

The polarity designation can best be explained by reference to the accompanying sketch in which H_1 and H_2 are the high-voltage leads and X_1 and X_2 are the low-voltage leads. In the first place there is a definite rule as to which leads (referring now to the core and not to the outside of the case) shall bear the "1" or "2" sub-numerals. This sub-numeral marking should be such that, if when the transformer is excited by the high-voltage winding and the H_1 and X_1 leads are connected, the voltage between the H_1 and the X_1 lead will be less than that on the high-voltage winding. This condition is shown by the dotted-line connections in the two upper diagrams.

When the H_1 and X_1 leads are brought out of the case to the same relative positions the transformer has "subtractive polarity." When H_1 and X_1 leads are brought out of the case to diagonally opposite positions the transformer has "additive polarity."

There is no difference in the method of connecting in parallel or in a bank, two or more subtractive transformers, or two or more additive transformers. Mixing the two types, however, necessitates reversal of the order of primary or secondary connections on the odd transformer.

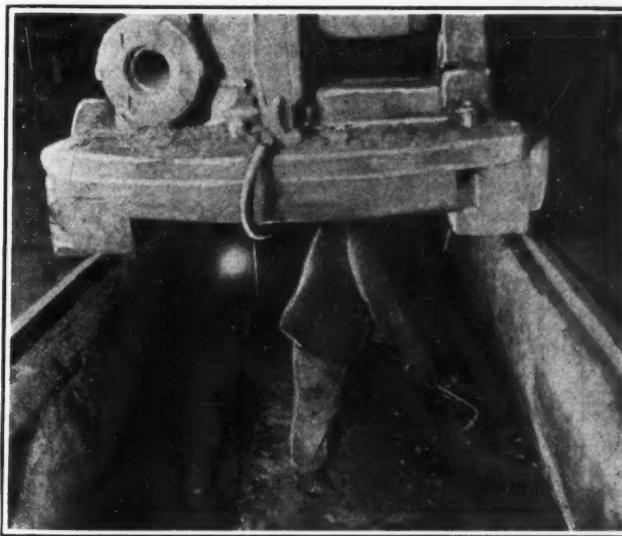
Usually when a transformer is encountered on which the name plate specifies the polarity, it signifies that

that particular transformer was assembled for some special use and that it has a polarity different from the standard of its manufacturer. Apparently there is a need for all transformer manufacturers to adopt the same polarity for their standard power transformers.

Wide Ledges and Beveled Sides Add To Convenience of Repair Pit

One of the difficulties of working in the average repair pit is the lack of a place wherein to lay tools so they can be reached conveniently. A pit in the shop of the Fordson Coal Co. at Nuttallburg, W. Va., is constructed with a ledge along each side, so that a mechanic can lay aside or pick up tools with one hand without taking the other from the work.

The design is shown in the accompanying sketch and

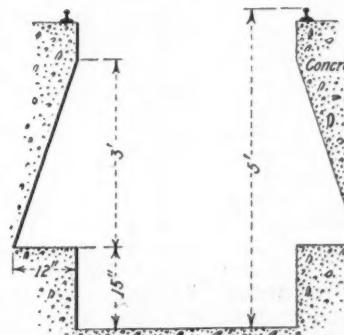


Man Working in Repair Pit

He is picking up a socket wrench from the ledge while holding a part in place above his head with the other hand. In the corner back of him is one of the two permanent lights.

photograph. This pit is 12 ft. long, and 5 ft. deep from the top of the rail. The ledge or shelf is often used as a foot rest as well as for a place on which to lay tools. For some reason lifting or holding an object overhead is easier if one foot can be rested on something 15 to 20 in. above the floor.

The beveled sides of the pit provide extra width which often becomes convenient in turning end for end some part that is being handled. On one side at each end of the pit, and protected to some extent by the overhang above the ledge, are lighting receptacles. A plugging-in receptacle for a portable drill or grinder is also provided.



Cross-Section Of Pit

The ledge comes handy as a place to rest a foot while lifting or working overhead, also as a place to lay tools within easy reach.



News Of the Industry



Hudson Coal Bond Issue of \$35,000,000 Seen as Segregation Step

A step toward segregation of the Delaware & Hudson R.R. coal properties was made on Tuesday, it is believed, with the offer of \$35,000,000 bonds of the Hudson Coal Co., which controls the coal holdings. Kuhn, Loeb & Co. and the First National Bank, New York, are marketing the bonds, which are offered at 98½, to yield 5.09 percent to maturity, in 1962.

The proceeds will be used to pay for properties acquired by the Hudson Coal Co. from the Delaware & Hudson Co. and the Northern Coal & Iron Co. The Hudson Coal Co. now owns in fee 21,229 acres of anthracite land, and its holdings of anthracite, after deducting coal deposits leased to others, are estimated at more than 540,000,000 gross tons.

The bonds will be the only funded debt of the company, which on March 31 had current net assets of more than \$17,000,000 and \$17,363,250 par value of stock outstanding, all owned by the Delaware & Hudson Co.

L. F. Loree, president of the Delaware & Hudson, declined to say what progress had been made in the segregation of the road's coal properties, an action already approved by the shareholders. Meanwhile, the next directors' meeting, scheduled for June 25, will be watched for a possible announcement on the next move.

Segregation of the Delaware & Hudson's coal properties would leave the Erie R.R. as the only important line which had not separated itself from its coal business.

Ask Southern Roads to Meet Cut in Lake Rate; Advantage Minimized in Northern Field

The recent decision of the Interstate Commerce Commission ordering a reduction of 20c. in the rates on lake cargo coal from the Pittsburgh and eastern Ohio fields has provoked a storm of protest from Southern producing interests who are demanding that the railroads serving the Southern fields meet the cut ordered in Northern rates.

This demand was voiced at a meeting of Southern interests held at Washington, D. C., on June 1. The meeting, presided over by James D. Francis, vice-president, Island Creek Coal Co., was attended by 92 operators representing the bulk of the production in West Virginia, Virginia, eastern Kentucky and Tennessee. Consideration also is being given to the possibilities of effecting a reversal of the Commission's decision.

While the Commission declined to exercise its powers under the minimum rate section of the Transportation Act of 1920 in the case, there was a strong intimation that action would be taken if the Southern carriers attempted to defeat the purpose of the Commission's order. "Under the issues now presented," said the majority opinion, "it is unnecessary for us to consider whether the rates from the Southern districts are lower than reasonable minima, but we are of the opinion that the carriers would not be justified in reducing the present rates from those districts."

Northern operators are inclined to minimize the advantage gained by the decision—possibly because the announcement of the reduction was immediately seized upon by the United Mine Workers as an argument that the Northern mines could now afford to reopen under the Jacksonville scale.

"The reduction of 20c. per ton on all lake shipments from Ohio mines," said Lee Hall, president of district 6 of the United Mine Workers, "will go a long way toward opening the mines of the state. The reduction brings the total cost of production under the Jacksonville scale to within 4c. of the former scale of 1917, on which basis operators have offered to settle individually with the miners. It is a start in the right direction."

Leading Ohio operators and J. L. Good, secretary of the Ohio Coal Bureau, declare that the reduction will not make it possible for producers to discuss a resumption on the Jacksonville scale. They point out that the reduction applies only to lake coal and that practically all lake contracts have been made for the season. Most of the operators are united in saying that the effect of the reduction will be to prolong the strike. It will give union officials a talking point to hold their men in line and will give no immediate relief to the Ohio situation.

F. W. Braggins, president, Lorain Coal & Dock Co., said the new freight rate would have no effect on eastern Ohio conditions. The reduction, while helpful, is not sufficient to permit the mines to operate on the Jacksonville scale, even if sufficient lake business could be secured to keep the output moving.

Kentucky Storm Kills 100, Floods Mines and Villages And Leaves Many Homeless

Floods caused by storms in Kentucky last week caused the death of about 100 people and washed away or wrecked the homes of hundreds of others. Production in the Hazard coal fields of eastern Kentucky will be seriously interfered with for a week or ten days if not longer. Officials of the Louisville & Nashville R.R. are quoted as stating that there is no hope of getting traffic moving until late this week. The volume of water coming down the Kentucky River and tributaries over the week end represented the worst flood that the section has ever known.

At Hazard, Ky., the power plant which supplies current to many mines in the field was put out of commission and it was expected that it would be a week or more before it would be able to resume. Without railroad facilities, wire communication or power, operating prospects are dubious.

The section of the Elkhorn field on the Louisville & Nashville R.R. also suffered considerably. The damage here was not so great as in the Hazard district, but traffic can't get through, as the trouble is below. High water on the eastern side of the mountains, in the Big Sandy valley, will interfere with the movement of production from the Elkhorn fields over the Chesapeake & Ohio R.R. Considerable mileage has been washed out, especially between Martin and Fleming, and in Johnson, Floyd, Magoffin and other counties there was heavy damage. The Licking River and Big Sandy were on a rampage.

The mining town of Wayland, Ky., according to advices late last week, was virtually washed away. Bridges were reported down at Hazard, Chavies, Haddix and Typo. Commissary stores at Wolfcoal and Deaton were reported washed out. Glomawr, another coal town, was reported wrecked. Nearly seventy houses were washed away between Chavies and Blackie. Henry Pfening, superintendent of the Southeast Coal Co., at Seco, Ky., with ten men was trying to re-establish wire communications. He reported ten company houses washed out at Seco.

The rise is over and the waters are going down, but it will take some time to rehabilitate the district in Perry and Letcher counties. Such mail as has been getting through has been moved over the divides on horseback in many instances.

Over 20,000 miners in the Elkhorn and Hazard fields were idle last week. More than 100 mines have been forced to suspend operations.

Commerce Commission Sustained By Supreme Court in Assigned-Car Case; District Tribunal Injunction Dismissed

The authority of the Interstate Commerce Commission to make a uniform rule for the distribution of coal cars by all railroads under its jurisdiction was upheld by the U. S. Supreme Court in a decision in the so-called assigned car cases rendered May 31 through Justice Brandeis. Justice McReynolds filed a separate opinion, dissenting from most of the conclusions of the majority of the court.

By its ruling last week the Supreme Court reversed the decree of the District Court of Eastern Pennsylvania which had granted an injunction sought by various interested parties against an order of the Commission. The order rendered by the Commission early in 1925 after an investigation, originated on its own motion in 1921, was to have become effective on March 1, 1925.

The order prescribes a uniform rule for all railroads on assigned cars and prohibits any carrier from placing for loading at any mine more than that mine's ratable share of all coal cars, including assigned cars, available for use in the district unless the carrier be permitted to place more by an emergency order of the Commission. Count shall be made of all coal cars, including private cars and railroad fuel cars.

A number of coal-mining companies, coal merchants, railroads, steel corporations and others challenged the validity of this order on the ground that the Interstate Commerce Commission had exceeded its authority. The federal District Court held to this view, although some mine operators intervened in behalf of the order and it was assailed by only thirty-five of the 3,073 railroads to which it applied.

Car Control Vested in Commission

The majority decision of the Supreme Court holds that the order is not unconstitutional; that Congress could, in fact, exclude private cars from interstate commerce if it so desired. It also holds that Congress has clearly given the Commission authority to regulate cars owned by railroads. Limiting the use of coal cars does not approach regulation of the coal-mining industry, the majority decision asserts. It further declares that there is nothing unreasonable in the order.

In his separate opinion, Justice McReynolds asserts that the real purpose of the order was to force large consumers of coal to apportion their purchases among a large number of producers and that it cannot reasonably be expected to relieve a car shortage should an emergency of that character arise.

The decision involved five suits. Four of these were started by private car owners. In one case the Berwind-White Coal Mining Co. and a number of other operators were the plaintiffs. A second case was brought by the Bethlehem Steel Co. and others, char-

acterized by the court "as integrated concerns which operate mines solely in order to supply coal to their manufacturing plants." Another group, including the Rainey-Wood Coke Co., represented the byproduct coke-making interests owning private cars, but not operating mines. In the fourth case the original plaintiff was the Public Service Gas & Electric Co., a public utility.

The 35 railroads attacking the Commission's order included many of the leading bituminous carriers of the country. The Pocahontas Operators' Association and certain other coal-producers' organizations intervened in support of the Commission's decision.

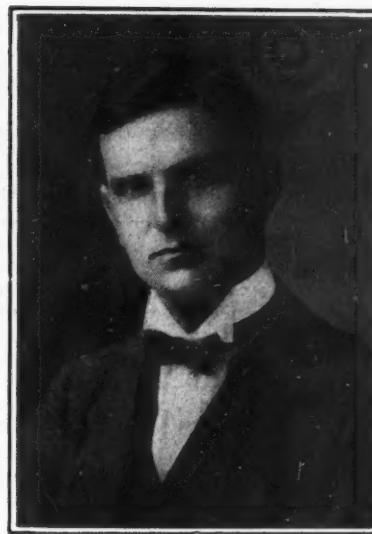
The subject of discrimination in car distribution to coal mines, the court points out, has occupied much of the time of the Commission since its creation in 1888. Between April 28, 1908, and the date of the Commission's second opinion in the case before the court, the Commission had passed upon the question of discrimination in distribution in 33 opinions in 28 cases.

Probe Instituted in 1921

"The rule here assailed," says the court, "was the fruit of an investigation commenced by the Commission of its own motion, in March, 1921, with a view to prescribing just and reasonable rules applicable to all carriers concerning the use of assigned cars for bituminous coal. Every carrier subject to its jurisdiction was made a respondent. Private coal-car owners, coal-mine operators, coal miners, coal distributors and large coal consumers became parties by intervention. The investigation extended over four years. The reports of the Commission on the original hearing and the rehearing occupy 117 pages of the record.

"It concluded that the practices expressed in the Hocking Valley-Traer rule, and other existing regulations of carriers, resulted in unjust discrimination and were unreasonable. It ordered that the carriers cease and desist from such practices. And it prescribed the uniform rule which prohibits any carrier from placing for loading at any mine more than that mine's ratable share of all cars, including assigned cars, available for use in the district; unless the carrier is permitted to place more by an emergency order issued by the Commission pursuant to paragraph (15) of section 1 of the Interstate Commerce Act as amended by section 402 of the Transportation Act, Feb. 28, 1920, chapter 91, 41 Stat. 456, 477.

"This rule requires that in determining how many cars are available in the district, the carrier placing the cars shall count all cars; that is, it must include with those owned by it, all owned by foreign railroads and assigned for their fuel service and likewise all owned by private shippers and assigned for their service. Thus, the prohibition embodied in the rule applies to all carriers, whatever the



Frank Hodges

character of the consignor or consignee, and whatever the use to which the coal is to be put."

The court refuses to hold "that it was arbitrary and unreasonable for the Commission to conclude that good service could be secured by a uniform rule which might be departed from with its consent and that unjust discrimination could not be prevented without such a uniform rule. It acted in the light of rich experience. It had learned by experience that the existing practices resulted in discrimination and unsatisfactory service.

"It had learned, also through experience, that the emergency powers conferred by the Transportation Act, 1920, afforded adequate means of supplying the needs and of averting the possible hardships and losses of carriers and of private coal consumers, to which the evidence and arguments had been largely directed. For the Commission had had much experience in applying these emergency powers in connection with the distribution of coal cars in times of car shortage, before it prescribed the rule here challenged."

Hodges Resigns as Secretary Of Miners' International

Frank Hodges, formerly in the British Parliament and a member of the MacDonald Labor Government, resigned last week as secretary of the International Miners' Association during a meeting of the organization in Paris. His withdrawal followed differences with A. J. Cook, radical labor leader, with a majority of the British members supporting Cook.

Delegates from other nations favored Hodges retaining the position, but he declared he was unwilling to carry on the long-standing feud. After tendering his resignation he took an airplane for London.

As a youth from one of the British mining districts Hodges went to Oxford University and worked his way up in industry and politics through his own efforts.

Retail Convention Learns Anthracite Faces Keener Rival in Byproduct Coke

Detroit, Mich., June 7.—Increasing competition between byproduct coke and anthracite in the domestic market was foreshadowed this morning at the tenth annual convention of the National Retail Coal Merchants' Association at the Book-Cadillac Hotel. Speaking for the Semet-Solvay interests, James A. Ballard, sales manager of the Semet-Solvay Co., Detroit, announced that his organization was planning to increase its output at the rate of 25 per cent per annum until production had been raised from 3,000,000 to 15,000,000 tons annually.

Most of this additional tonnage, he said, would be sold for household consumption because the fluctuations in the iron and steel industry made the metallurgical market too uncertain a basis upon which to build such an expansion program. The maximum tonnage named is approximately the total quantity of byproduct coke now used for household fuel. At the present time, said Mr. Ballard, Michigan leads in domestic coke consumption, largely as the result of the campaign of education launched in the Wolverine State a quarter of a century ago.

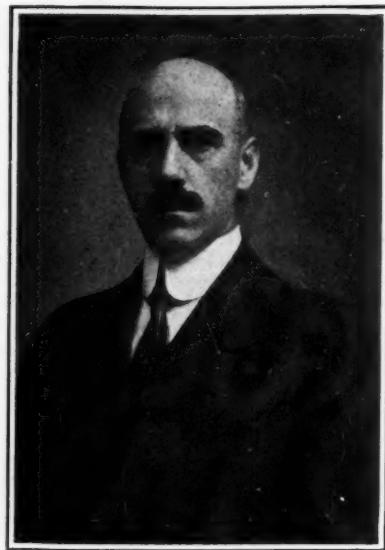
The coke interests proposed to continue their educational work with and through the retail distributors. In discussing present prices of fuel the high cost of railroad transportation was stressed by Mr. Ballard. The railroads, he said, received the lion's share of the total cost involved in mining and shipping raw coal to the ovens and as coke from the ovens to the ultimate consumer. The coke interests, he added, would locate ovens at the points where they believed the total costs, all things considered, would be the lowest.

Retail Industry Flourishing

"The retail coal industry of the United States," declared President Tattersall, in opening the convention yesterday morning, "is in better condition than ever before in its history." Unlike some of the earlier gatherings of the association, when major interest revolved about some one particular problem, the present program is devoted to a consideration of several of the every-day questions of retail yard operation. In this arrangement, however, highlights are being thrown on the work being done to make the retail coal merchant better fitted to render real combustion service to the domestic consumer and on the campaigns undertaken by the operators to effect a closer tie-up with their retail distributors.

Although the meeting is being held in a city where coke and semi-bituminous coal enjoy a large share of the domestic business, the sessions so far held have had an anthracite flavor. Several representatives of the hard-coal interests have taken part in the program. The only distinctively soft-coal feature was staged this morning when a motion picture showing the mining and preparation at plants of the Pocahontas Fuel Co. was exhibited.

The first day's business session of



S. D. Warriner

the convention was taken up with presentation of the reports of the officers and standing committees of the association. President James C. Tattersall, of Trenton, N. J., laid special emphasis upon the achievement of the industry in blocking coal legislation at the last session of Congress and on the development of greater co-operative effort between the retailers and the anthracite producers. As a result of the re-establishment of the summer discount policy, backed by service and advertising, he said, retail anthracite deliveries during April and May had increased 5 to 15 per cent and many dealers now had 25 per cent more business on their books than at this time last year.

Joseph E. O'Toole, resident vice-president stationed at the national capital, reviewed the work done by his office the past year and the growth in membership and influence of the organization in the past ten years. "If measured by the yardstick of numbers and dollars," he said, in announcing that the association now had the largest surplus in its treasury in its history, "no one can deny that we have made progress. But we do not like to gage a man's usefulness or progress by his bank account or the number of people with whom he is acquainted; rather do we try to learn his power for good in the community and whether he really helps his fellow men. It is this latter test that I would rather apply in ascertaining whether the national association has really made progress."

No Lobby or Slush Fund

Hostile legislation, said Roderick Stephens, chairman of the committee on government relations, had been defeated without a lobby or a slush fund. Mr. Stephens paid tribute to the activity of Representative Adam Wyant of Pennsylvania in opposing the Parker bill. Samuel Crowell, Philadelphia, reviewed the progress in better understanding growing out of the frequent meetings between committees representing the retail association and the Anthracite Operators' Conference.

Hiram Blauvelt, chairman of the committee on public relations, praised the co-operative advertising and service

program of the operators. Traffic questions were touched upon by Frank Mathers, of Philadelphia, and W. R. Feuquay, of St. Joseph, regional chairmen of the committee on transportation. Major C. B. Staats, chairman of the committee on finance and membership, was optimistic on the present status of the organization.

S. D. Warriner, president of the Lehigh Coal & Navigation Co. and chairman of the Anthracite Operators' Conference, was the principal speaker at the luncheon following the business session. With "Anthracite—the Premeinent Fuel" as his subject, Mr. Warriner urged that retailers show a livelier sense of their responsibilities and obligations to the producers of hard coal. The latter, he asserted, had made large investments to stabilize their business and were in business to stay. They had selected the retailers as their agents and expected the retailers to reciprocate by pushing the sale of anthracite so that the relationship might continue. "More and more," he declared, "the thinkers in industry are coming to see that our great unsolved problems are those of distribution rather than production. This is true in every line.

"We have raised the efficiency of production rather above that of distribution. You, gentlemen, therefore, are engaged in that field which offers the greatest possibilities of advance and improvement over methods of the past, in our own industry. Costs, of which the greater part are labor, cannot be materially reduced. We must then concentrate our effort on quality and supply a product that satisfies the consumer, teaching him how to use it economically—selling satisfaction as well as fuel.

Hard Coal to Expand

"Be assured, gentlemen, that an industry with so great an investment, with a fuel of so great inherent advantages, with, in short, so much at stake and so much to gain, is here not only to stay but to expand. In this determination we invite the closest co-operation of those dealers who take pride and satisfaction in the distribution of the fuel for which there is no substitute."

C. J. McCabe, chief smoke inspector for the City of Detroit, opened the discussions this morning with a talk on "The High Cost of Smoke." C. Willing Hare, general manager of the Anthracite Coal Service, addressed the delegates upon the necessity for co-operation between producer and distributor and service from mine to consumer. His organization, he said, now had 23 combustion engineers working to hold and regain anthracite markets and 24 service engineers who already had instructed nearly 900 employees of retail coal companies in the principles of combustion.

"What the Retail Coal Merchant Should Know About Domestic Heating Equipment" was the subject of an informal talk by Martin A. Rooney, sales engineer, American Radiator Co. Mr. Rooney paid special attention to the importance of proper chimney construction and maintenance. Faulty chimneys, he said, were the cause of 95 per

cent of the consumer complaints on coal. While he admitted that different types of fuel required different types of boilers if the greatest efficiency in combustion were to be attained, nevertheless he recommended the all-purpose boiler for ordinary domestic installation, so that all fuels might be used.

Some criticism was voiced from the floor of the convention by retail dealers who complained that instruction cards issued by the boiler manufacturers usually recommended that stove coal be burned. This, they said, made it difficult to sell the consumer another size or grade even when the latter would give more satisfactory service. Mr. Rooney replied that later issues of instructions had been revised to meet present-day needs.

Mr. Stephens urged the convention to go on record as advising the dealers to pay special attention to degradation and segregation of coal in co-operation with the anthracite producers. Detailed studies are being made at New York and the results soon will be available for publication. Degradation losses on anthracite sizes, he said, generally ran from 30 to 50c. per ton on chestnut; the losses in degradation and segregation were as high as \$1.

Harry A. Smith, vice-president, Delaware, Lackawanna & Western Coal Co., was the speaker at the noonday luncheon, talking on "What Standardization of Sizes Means to the Retail Coal Merchant." Senator Pat Harrison of Mississippi will make the principal address at the annual banquet this evening. The convention will close tomorrow.

The National Association of Retail Coal Secretaries at a meeting last night elected Jesse G. Suter, Washington, D. C., president; Owen M. Fox, Chicago, and George W. F. Woodside, Albany, N. Y., vice-presidents, and F. C. Conkey, Elizabeth, N. J., secretary-treasurer. This organization is a subsidiary of the National Retail Coal Merchants' Association.

Mystery Veils Steady Climb Of Pittsburgh Coal Stock

Definite explanation of the steady climb of Pittsburgh Coal Co. stock in the financial market was still lacking when the common hit a high of 73 on Monday. Rumors last week continued to link Standard Oil, railroad and other coal interests in the buying movement.

A report from Pittsburgh on Monday was to the effect that an announcement would be made within a week or ten days of a merging of interests of the Pittsburgh Coal Co. and the Pittsburgh Terminal Coal Corporation.

Frank R. Taplin, chairman of the board of directors of the Terminal Corporation, and his associates in the Pittsburgh & West Virginia, Wheeling & Lake Erie and other railroads and interests associated with him, it was said, have been buying the stock of Pittsburgh Coal, which has been notably active for two weeks.

The Montour R.R. of the Pittsburgh Coal Co. figures materially in the general plan of the merger, it was declared in Pittsburgh financial circles.

Co-operation of Operators and Miners Urged by Bureau of Mines to Curtail Heavy Loss of Life from Roof Falls

Studies being made by the U. S. Bureau of Mines into the underlying causes of falls of mine roofs for the purpose of finding remedial measures, if possible, are described in a report issued June 1 by the Bureau. More than 1,200 coal and metal miners are killed every year from this cause, according to the report, which follows, in part:

"The killing of more than 1,200 coal and metal miners every year by falls of the mine roof constitutes one of the biggest problems in the mining industry of the United States. The magnitude of the problem was recognized by Congress when it voluntarily appropriated funds for the prosecution of a special investigation by the Bureau of Mines into the underlying causes of these accidents and possible remedial measures. It is recognized by the Bureau that the solution of this problem is very largely a matter of enlisting the hearty and active co-operation of both the mine operator and the mine employee.

Systematic Timbering Needed

"It is found that the majority of accidents from falls occur where the roof is not artificially supported by timber or other means; that the placing of timber is governed in a few cases by regulations which call for placing roof support systematically; but in most cases the timber is placed where in the judgment of the miner or foreman there appears to be danger; that the soundness of the roof is determined by miners and officials by tapping the roof with picks, drills and wooden or iron bars, their judgment being governed by vibrations or sound; that the greatest frequency and severity of accidents from falls occur in mines where there is lack of systematic timbering and lack of supervision.

"The subjects that admit of laboratory research or testing in a study of falls of roof are relatively few; but, there is a field for research and tests which would embrace the following:

"Devices for testing the soundness of roof.

"The effect of moisture and change of temperature on roof material, such as shale, clayey shale and slate-like shale.

"The relative effectiveness of material suitable for application to mine roof to prevent it from weathering.

"The testing of material and structures used for support of the roof.

"A study of current practices at mines is believed to afford an opportunity of obtaining valuable information as to the cause of accidents from falls, which will lead to remedies for their prevention. This investigation embraces many features of engineering and developed practices, among which may be listed: The mining method; the local geology; character and nature of roof material; details of circumstances under which accidents

occur; method of timbering employed; timber regulations; supervision of timber regulations, and methods of testing the roof and roof inspections.

"A very large proportion of falls-of-roof accidents are undoubtedly due to the failure of the individual miner to exercise the full precautions necessary for his protection. It is recognized, therefore, that any successful campaign for the reduction of this class of accidents must be largely directed toward the awakening of the miner to the urgent necessity of preparing himself to guard unceasingly against the peril.

"All states in which mining is a prominent part of the industrial activity have enacted laws for the protection of those engaged as employees. These laws generally prescribe that the roof should be supported or made safe for the workmen, and foremen are required to be employed to see that the law is fully carried out. A study, therefore, of the laws of the states and their effect on accident prevention from falls of roofs is pertinent to this problem. The laws of the states as they relate to timbering and roof support have been abstracted and tabulated by the Bureau investigators.

"During 1926 and 1927 a co-operative study has been conducted with the Department of Mines of West Virginia in current practice at several mines in West Virginia. Co-operation with the Safety in Mines Committee of Great Britain is expected to materialize in the exchange of data with the committee on support of workings. An effort will be made to bring about co-operation with the departments of mines of the several states, the local coal operators' associations and the support of localized advisory committees on falls or roof.

"J. W. Paul, formerly chief coal-mining engineer of the Bureau of Mines, is senior investigator in the study of this problem."

Burning Woodward Mine Not to Be Flooded

Water will not be flushed into the basin at the Woodward colliery of the Glen Alden Coal Co., Edwardsville, Pa., in order to check the spread of fire following the squeeze and explosions of two weeks ago. This was decided last week at a conference of mine officials at the Woodward office.

The aircourses will be sealed with a brattice of wood and canvas to prevent the fire from gaining new headway.

The reason assigned by the officials for not running water into the mines, as at first contemplated, is that it would consume too long a time and would result in untold damage to the basin area of the shafts.

Joseph J. Walsh, formerly state Secretary of Mines, does not believe the fire is making much headway, but says plenty of gases are evident in the mine.

Direct Appeal to Ohio Men Urges "Competitive" Scale; Legal Skirmishes Continue

A direct appeal to the miners in Ohio to accept the competitive wage basis and further legal clashes in western Pennsylvania were the highlights in the labor situation last week as the suspension which has tied up the greater part of the production in the Central Competitive Field, Iowa and the Southwest entered its third month.

The appeal to the Ohio men, foreshadowed in the meeting of the executive committee of the Ohio Coal Operators' Association at Columbus a fortnight ago, was made at a general meeting of Ohio producers held at the Union Club, Cleveland, last Friday. Whether the operators will take the next step and attempt to reopen their mines on an open-shop basis remains to be seen. In view of existing market conditions, early action along that line is considered doubtful.

In the Pittsburgh district, the union again came out victorious in its fight to prevent the early eviction of men from company houses of the Pittsburgh Terminal Coal Corporation at Coverdale. The Allegheny County Court, to which tribunal the coal company had made an appeal for an emergency decision, on June 2 handed down an opinion approving the bonds filed by the United Mine Workers in the appeal of eight eviction cases to the Superior Court. The higher court, it is said, will not be able to pass upon the appeal for several months. In the meantime the bonds act as a stay of eviction proceedings.

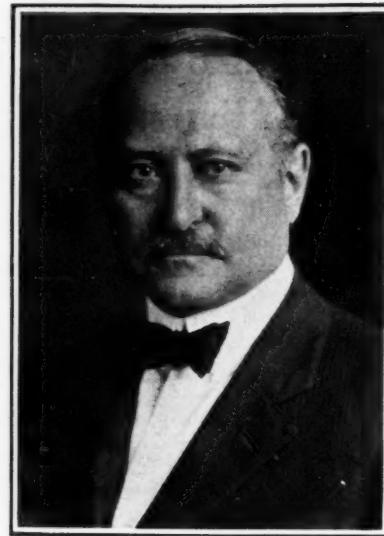
Patrick T. Fagan, president of district 5, was arrested June 1 on a charge of disorderly conduct after approaching a truck being loaded with men in front of the general offices of the Pittsburgh Terminal Coal Corporation. Mr. Fagan was fined \$10 by a local justice of the peace. Notice of appeal was filed and announcement also was made that Mr. Fagan would sue the coal company for \$25,000 for unauthorized arrest. The arrest was made by coal and iron police.

Arrest 13 on Riot Charge

Twelve men and one woman were arrested by the state police on June 1 at Glendale, near the Mansfield mine of the Pittsburgh Coal Co., on charges of inciting a riot. The arrests followed a disturbance between striking miners and non-union workers on their way to the mine.

The Pittsburgh Coal Co. reported a production of 123,253 tons during the week ended May 28. The average number of men employed was 5,533. This was an increase of 1.7 per cent in output and 1.5 per cent in the number of men at work over the preceding week, which was the highest since the second week of March.

Frank J. Hayes, former international president of the United Mine Workers, arrived in Pittsburgh last Thursday and planned to address a series of meetings of striking coal miners. The first meeting was held at 3 o'clock Sunday afternoon near the Pittsburgh Coal Co.'s Montour No. 1 mine, four miles west of Bridgeville.



Samuel B. Crowell

President Lewis and others will address a meeting at the Charleroi baseball park June 14. Lewis also will be heard at meetings at the McDonald baseball grounds June 15, at the Parnassus High school, near New Kensington, June 16, and at the Bridgeville race track June 17. These four meetings will be held at 6:30 p.m. Amplifiers will be used and arrangements have been made to accommodate crowds of several thousand persons at each gathering.

Representatives of the union miners and operators of central Pennsylvania will resume negotiations of a new wage agreement next Wednesday at the Bellevue-Stratford Hotel, Philadelphia. The scale committees of the producers and the union called a recess May 27 after a conference lasting five days.

Indiana Mine Signs with Union

The Pike County Coal Corporation has taken over the two Indiana properties of the General Fuel Co. at Somerville and resumed operation by arrangement with the United Mine Workers under the Jacksonville scale. Only one of the two mines is being operated. It is the larger and hoists 2,500 tons daily, employing approximately 400 miners.

It is reported that a few small mines in Indiana have resumed operation on a co-operative basis.

The Saline Valley Coal Co. in operating its small mine at Carrier Mills, in southern Illinois, employing about 22 men and producing approximately 150 tons a day, is understood to have been given a special day wage rate by the union. The rate is said to be \$7.25 for common labor with a maximum of \$8.04 for machine men.

Generally the large union companies in Illinois and Indiana are drifting along without knowing or caring much where they are going. It is expected that the plight of both the miners and the operators will be accepted and recognized before very long and that when the time comes a conference will be held to attempt to negotiate an agreement that will permit a resumption of mining. Meanwhile the status quo of April 1 prevails in these states.

Crowell Again Will Head Pennsylvania Retailers

Samuel B. Crowell, of Philadelphia, was re-elected president of the Pennsylvania Retail Coal Merchants' Association at the twenty-third annual meeting of that organization held in Wilkes-Barre, June 1 to 3.

Walter L. Montgomery, of Harrisburg, was elected vice-president, and J. Arthur Strunk, of Reading, treasurer. The newly chosen directors are J. C. Grove, of New York; James W. Hunsberger, of Jenkinson; C. Frank Williamson, of Media; Samuel Goodyear, of Carlisle, and J. D. Bocchus, of Chestertown, Md. Frank G. King, of Bethlehem, is chairman.

The association voted in approval of the coal service bureau established by the Anthracite Operators' Association and recommended that the bureau be continued in existence.

Everettville Blast Inquest Slated for Morgantown

Robert M. Lambie, Chief of the State Department of Mines of West Virginia, announced last week that the inquest on the explosion at the Federal No. 3 mine of the New England Fuel & Transportation Co., Everettville, in which 97 miners were killed on April 30, would be held in Morgantown on June 8.

Fire in the mine coupled with the presence of much oxygen and methane in the atmosphere slowed up restoration and recovery work. The conjecture of the largest number of critics is that the explosion originated in the vicinity of the faces of the new main entries. Marks of the greatest violence are manifest in this area.

Brophy Lays Defeat to Fraud

In a circular letter sent to the membership of the United Mine Workers, John Brophy, former president of District 2 (central Pennsylvania), who was defeated recently for president by John L. Lewis, has demanded an investigation of the balloting on Dec. 14.

Brophy, it is said, charges irregularities and frauds. In his statement he declares that "tens of thousands of ballots have been added, subtracted or twisted about to suit the desires and needs of the perpetrators." Brophy says that he has appealed to the international executive board to name a committee to investigate circumstances surrounding the election and the actual count of votes cast.

Anthracite Circular Prices for June in New York

	(Per Gross Ton, F.O.B. Mine)	Broken Egg	Stove	Nut	Pea
Lehigh & Wilkes-Barre Coal Co.	\$8.25	\$8.50	\$9.00	\$8.50	\$6.00
Delaware, Lacka.					
& W. Coal Co.	8.25	8.50	9.00	8.50	6.00
Phila. & Reading					
Coal & Iron Co.	8.50	8.50	9.10	8.50	6.50
M. A. Hanna Co.	8.50	8.50	9.10	8.50	6.25
Hudson Coal Co.	8.45	8.45	9.05	8.45	6.20
Lehigh Valley Coal Sales Co.	8.50	9.10	8.50	6.00	
Lehigh Coal &					
Navigation Co.	8.60	8.60	9.10	8.60	6.25
Steam sizes: No. 1 buckwheat, \$2.50@\$3; rice, \$2@\$2.25; barley, \$1.50@\$1.75.					

Concerted Effort to Curtail Oil Glut Recalls Coal Depression of 1923-1924; Blame Laid in Part to Anti-Trust Laws

By Paul Wooton
Washington Correspondent of *Coal Age*

A matter almost as important to the coal industry as it is to the oil business is the effort being made by the Federal Oil Conservation Board, various states and by the industry itself to curtail overproduction. Until recently there was a widespread feeling that there would be no more gluts of oil thrown onto the market. It was felt that the industry itself had learned a lesson from the tremendous waste which resulted from the period of overproduction which began in 1922 and extended into 1925. Then, too, it was felt that the chances were against further coincidents in the discovery of flush pools.

This hope has been shattered and the maximum possible amount of oil is being forced into consumption, regardless of the many reasons why this valuable resource should not be wasted. Crude oil is so plentiful that only the more easily recovered portion of its gasoline content is being taken. President Teagle, of the Standard Oil Co. of New Jersey, declares that overproduction has appeared this year in the most malignant form in the history of petroleum production in America.

The use of the highly descriptive adjective "malignant" is significant in its application to the petroleum situation. "Malignant" suggests the need of quick and radical action, and of heroic measures, if relief is to be afforded.

Prompt Action in Texas

The chief trouble is recognized as human nature aided and abetted by the anti-trust statutes. Texas, which once was conspicuous as a trust-busting state, is setting an example to other states and to the federal government in formulating sane legislation which promises to help the situation before it is too late. Influential oil operators have co-operated closely with the state commission, which is distinguishing itself for its vision and its practicality. Governor Moody is said to be in agreement with a broad and progressive plan of regulation intended to check unrestricted competition.

This is particularly significant as the oil field which threatens next to disturb the economic balance between supply and demand is in Texas. It also happens that the existing Texas anti-monopoly laws are among the most restrictive. In Washington it is felt that the willingness of the oil industry to subject itself to broad-gage regulation is the most favorable symptom which this very sick industry has shown.

At present the facilities in the country to store petroleum have been utilized to the full. There have been five cuts in the price of crude oil in rapid succession. Fuel oil and gasoline prices are being cut and apparently are headed for the lowest level in a decade.

One of the greatest obstacles in the

path of conservation is the anti-trust statutes. The industry is uncertain as to how far it can go in a direction that all concede to be in the public interest, without running afoul of the Department of Justice.

The Federal Board has put itself definitely on record in its recognition of the economic waste involved in the use of oil where coal will serve the purpose. Its suggestion of a remedy appears repeatedly in the emphasis placed on co-operative action both within the industry and between the industry and the public. The Secretary of the Interior, the Secretary of War, the Secretary of the Navy and the Secretary of Commerce, who comprise the Board, in a report to the President subscribed to this:

"Co-operation within the industry can effect economies all along the line—in development and production, a better balancing of supply to demand, when and where the oil is needed; in transportation, better planning, thus avoiding crosshauls of crude and crosshauls of products; in distribution, less duplication of marketing facilities, which at times even involve an expense equal to the cost of production and refining. Large savings in both production and refining are possible through the general adoption of the best technique already used by the more progressive units.

"Co-operation within the industry is recommended in both research and action, in discovering the best practice and in adopting it. Field co-operation between neighboring operators in preserving back pressure and reducing the gas factor is an example of practical conservation, or, if it is too late to do this, field co-operation can take the form of building up pressure by artificial means. United and co-ordinated effort is the method recommended.

Urge Complete Co-operation

"The complete organization of co-operative effort is recommended, with simple but effective working units that will insure full contact of the industry with both state and federal governments and continuous contact between all operators in an oil field. Co-operation of the industry with the government in planning and carrying out research is necessary, to make full use of all the facilities, resources and personnel available."

A notable fact brought out by Secretary Work in his recent conference with a committee of oil company executives, is the present practice of Uncle Sam as a landlord leasing large acreages of producing oil land. He has met the operators more than half way in all efforts to delay development or reduce production. The wells on government lands are at present producing less than half their capacity. A large part of the

\$8,499,000,000 in Taxes Paid in U. S. Last Year

Total taxes collected by the federal, state and local governments in the United States in 1926 amounted to \$8,499,000,000, the highest figure reached since 1921, when tax receipts reflected the peak of post-war inflation, according to a report by the National Industrial Conference Board of 247 Park Avenue, New York. Its summary showed the total amounts collected in 1925 and 1924 as \$7,891,000,000 and \$7,821,000,000 respectively.

While total tax collections in 1926 thus exceeded those of the previous year by more than \$600,000,000, Magnus W. Alexander, president of the Conference Board, said this increase occurred in spite of the substantial tax reduction program effected by the federal government and reflected to a large extent better federal collections due to increased business prosperity during the preceding year.

shut-in production in the United States is in wells under the control of the government. Uncle Sam is taking his own medicine.

"Clearly," Secretary Work said, "the oil industry needs its business stabilized. The public should be assured of adequate supply and freedom from price fluctuations. Conservation measures will be justified and will become popular with both producer and consumer if they are directed toward lowering the cost of production and effecting savings in oil, in labor and in capital expenditure."

Overproduction Unsettles Prices

In touching upon price fluctuations which are traceable to overproduction, Secretary Work puts his finger on the sore spot in the competition between coal and oil. President Coolidge's warning issued in 1924 applies with equal timeliness to the present situation. This is his statement: "Oil, of which our resources are limited, is largely taking the place of coal, the supply of which seems to be unlimited. Overproduction in itself encourages cheapness, which in turn leads to wastefulness and disregard of essential values."

Overproduction of oil is held to be one of the causes of the depression which bore down upon the coal industry in 1923 and 1924. If that experience is to be repeated the coal business stands to lose 50,000,000 tons of business, if the glut of oil continues for two years. The center of interest in Washington in so far as the coal trade is concerned now shifts from the Interstate Commerce Commission, which just has disposed of the lake cargo case, to the Federal Oil Conservation Board, which is trying to work out a practical and equitable method of checking overproduction.



News Items From Field and Trade



ALABAMA

May Double Seaboard Output.—The Seaboard Coal Mining Corporation is reported to be considering doubling the capacity of the Warrior View mine, recently acquired along with a large acreage of coal lands in Tuscaloosa County from the Warrior View Coal Co. The plans provide for a large storage bin on the banks of the Warrior River and equipment for loading the output of the mine direct onto barges.

More Convict Miners Withdrawn.—In accordance with the program of the state for the ultimate withdrawal of all convict labor from the coal mines, 275 prisoners were transferred from the Wegra Mine of the Alabama By-Product Corporation June 1 and distributed to various sections of the state to work on road projects.

The DeBardeleben Coal Corporation recently opened a new mine at Corona, known as No. 16, which is producing about 200 tons per day at present. The output will be increased to a minimum of 500 tons per day as rapidly as practicable. The corporation operates a large group of mines on the Corona seam at the same location.

Mobile Dock Contract to 3 Firms.—The State Dock Commission of Alabama will award contracts for the proposed coal-handling plant at Mobile in three sections. The work will go to the Mead-Morrison Manufacturing Co., New York; Robins Conveying Belt Co., New York, and the Link-Belt Co., Chicago, the aggregate amount of the contracts being between \$450,000 and \$500,000. The plant will be located on a site at Mobile River and Three Mile Creek approximately 900x200 ft. and will not only be equipped to handle coal but all other kinds of mine products.

ILLINOIS

The top works and machinery of the Paradise Coal Co. near Duquoin have been offered for sale piece by piece. The mine will be dismantled and abandoned. The Paradise mine has been in operation over a quarter of a century and was one of the first mines to go down in the Duquoin district.

United Electric Profits Rise.—The United Electric Coal Co.'s reports profits from operations, before royalties, depletion and depreciation, of \$1,079,445 in the nine months ended April 30, compared with \$785,676 for the nine months ended April 30, 1926. Net income was \$521,700, compared with \$379,949. For the three months ended April 30 net income was \$153,337, compared with \$89,429 in the corresponding period of last year.

At the election in Saline County, coal miners of the county voted for their choice for county mine inspector, an officer appointed by the County Board of Supervisors, which always refers the matter to the coal miners.

Robert Harrison of Harrisburg was the successful candidate.

The Red Top Coal Co., which plans to operate a strip mine six miles east of Marion, will start construction about June 15. The company has about 600 acres of coal lands.

Pike County Mines Resume.—Work has been resumed at the mine of the Pike County Collieries Co. and the Gray stripper in Pike County, following a shutdown since April 1. Two of the stripping shovels were started and the third one will resume operations as soon as the water can be pumped from the pit, which will require several days, it is said. Coal can not be loaded until the building of a switch has been completed. This track will serve two pits.

INDIANA

Work at the new Globe strip field in Pike County is being pushed at a rapid rate and construction work is well under way. The roadway for the new track for the field between Winslow and Cato, purchased recently, is being rushed with a large force of men under the direction of Eli Hendricks, manager of the company. The coal company has purchased several hundred acres of strip land extending to Cato.

KENTUCKY

Carbondale Mines Resume.—Activities have been resumed at the Carbondale mines in Hopkins County and more than 100 men have reported for work. The mines have been idle for several months since the former owner, the Hawley Coal Co. and later the Carbondale Coal Corporation, was placed in the hands of receivers by U. S. District Judge Charles I. Dawson. The property of the corporation recently was purchased by a bondholders' com-



American Delegates to the World Economic Conference at Geneva, Switzerland, and Expert Advisers Who Accompanied Them

Bottom row, left to right: Henry Chalmers, chief of the foreign tariffs division of the Bureau of Foreign and Domestic Commerce; Dr. Arthur N. Young, economic adviser, Department of State; Roland W. Boyden of Boston, representing the International Chamber of Commerce; Dr. Julius Klein (delegate), director, Bureau of Foreign and Domestic Commerce, Department of Commerce; Henry M. Robinson (chairman of the delegation), president, First National Bank, Los Angeles; Norman H. Davis (delegate), formerly Assistant Secretary of the Treasury and Assistant Secretary of State; Alonzo E. Taylor (delegate), director, food research, Stanford University; Dana Durand, chief of the research division, Bureau of Foreign and Domestic Commerce. Top row, left to right: Dr. Louis Domeratzky, chief of the regional division of the Bureau of Foreign and Domestic Commerce; John P. Frey, editor, *Moulders' Journal*, advisor on labor questions; Edward Eyre Hunt of Washington, D. C., Department of Commerce; Grosvenor Jones, chief of the finance division, Bureau of Foreign and Domestic Commerce; E. W. Camp, commissioner of customs, Treasury Department, and W. L. Finger, secretary to Dr. Julius Klein, serving as administrative aide.



Cleveland Retailers Visit New River-Winding Gulf Coal Fields

mittee when the receivers sold the holdings at Carbondale. It is expected that the mines will operate steadily all summer.

County Tax Cut.—That the tendency of the times is toward lower taxation as an aid to business was demonstrated in Jefferson County, last week when the County Commissioners announced a cut of 3c.—from 40c. to 37c.—for county purposes.

MISSOURI

Coal Output Heavy in 1926.—Coal output in Missouri increased approximately 300,000 tons during 1926 compared with 1925, according to the thirty-ninth annual report of the State Bureau of Mines. The total production for last year was 2,849,884 tons valued at \$8,799,893.42 f.o.b. mines. The 1925 output was valued at \$7,388,083.67. "While it appears that coal has an overproduction, the fact remains that if the people of this state would use their own products it would be necessary for many more coal mines to be developed," the report states.

OHIO

Jerome Watson, chief inspector of the State Department of Mines and Mining, announces that all firebosses and foremen of the first class in Ohio mines, after Dec. 31, 1927, must be licensed and given a certificate after passing an examination. This test is to be given by deputy inspectors and arrangements are being made to formulate the questions at the conference of deputy inspectors with Mr. Watson to be held in Columbus the week of June 20. Mine foremen or bosses of the second class may be granted certificates upon the recommendation of operating companies. In mines where there is danger of explosions all firebosses and foremen must pass the examination and obtain a license.

Rate Bill Fails to Pass.—The Legislature having finally adjourned with no change in any bill being reconsidered, the Mardis bill, providing for a reduction of intrastate coal freight rates, failed to become a law. The bill, which was introduced by Representative S. K. Mardis of Athens County, provided for a reduction in intrastate rates from 5 to 25 per cent based on the haul. The bill was passed by the House and reported out by the committee on mining in the Senate, but failed to weather the

storm in the closing days of the Senate's session. It will be brought up again at the next session.

PENNSYLVANIA

Seaton Estate Buys Thompson Tract.—J. V. Thompson's 1,000-acre coal tract in Greene County, offered at sheriff's sale in Waynesburg after being seized at the suit of Charles A. Tuit and Charles S. Bowman, executors of the estate of Charles H. Seaton, on two mortgages aggregating \$103,000, was bought in by the executors for \$125,000. Accrued interest on the mortgages had brought the indebtedness to approximately this figure. The coal tract is one of the best in Greene County and will be held as an investment asset of the Seaton estate.

Fisher Seeks Secretary of Mines.—Among the few major appointments Governor Fisher still has to make is that of a Secretary of Mines. Reorganization of the State Department of Mines is contemplated as soon as the executive names a successor to Joseph J. Walsh, of Wilkes-Barre. The position will pay \$10,000 a year, an increase of \$4,000 over the salary heretofore. "I have been giving the matter much consideration," said Governor Fisher last week in discussing the appointment. "The big thing is to find a man who can capably fill the place. As soon as I do that I will make the appointment. Former Secretary Walsh is connected with the department in an advisory capacity, Deputy Secretary Frank Hall being in charge of the department.

UTAH

Urge Anti-Smoke Plants.—In addressing the city commission of Salt Lake City the other day on the subject of eliminating smoke from coal Lewis S. Karrick, formerly of the U. S. Bureau of Mines, said: "Several types of low-temperature carbonizing processes will accomplish the treatment, and from the plant there will be ample gas produced for the city's future needs, the fuel value of which will be equal to natural gas. Oils will be extracted which can be readily marketed in the community and a low-temperature smokeless coal or synthetic anthracite, which is suited to use in all types of coal-burning devices, will be the result. The cost of heating for the home owner will be no higher than by the use of coal and this

plan will completely eliminate all the smoke from the city."

Plan Addition to Coke Plant.—The Columbia Steel Corporation has awarded the Koppers Co. of Pittsburgh the contract for constructing 23 additional coke ovens at its plant in Ironton, involving an expenditure of approximately \$1,000,000. The work will begin immediately. The original installation was 33 ovens with a daily output of about 500 tons. The additional battery will increase the production to about 850 tons daily. This will increase the coal needs of the plant to about 1,700 tons a day. Further development of the company's coal mine is necessary to insure an adequate supply of coking coal.

To Expand Mine Bureau.—The University of Utah Bureau of Mines is about to be reorganized with E. A. Lyons, assistant director of the U. S. Bureau of Mines, as the sole head of all activities. It is understood that the present staff will be expanded. Heretofore the bureau research work has been conducted by a representative of the federal bureau and a representative of the university. As a result of the changes at the Bureau more attention is expected to be given the study of the cokeability of Utah coals.

State Loses Land Case.—The case of the Independent Coal & Coke Co. and Carbon County Land Co. v. United States and Carbon County No. 300 has been decided in favor of the government, the U. S. Supreme Court affirming the decision of the lower court. In doing so, the court held that the ownership of certain land granted to the State of Utah by its enabling act was in the United States, it having been determined to be mineral land. The statute of limitations, it was said, was not applicable to certificates of lands as to patents of lands. Justices McReynolds, Sutherland and Butler dissented.

CANADA

Miners Return to Dominion Pits.—At the Dominion Coal Co. mines, Glace Bay, N. S., the miners are hoisting coal again. The men accepted the advice of the United Mine Workers' executives to return to work pending a settlement of the grievances of roadmakers. Over 2,000 men have been idle in sympathy with the roadmakers, who have asked for a contract wage in place of the present datal rate.

Among the Coal Men

W. J. Richards, president of the Philadelphia & Reading Coal & Iron Co., announced his resignation last week, effective July 1, according to a report from Philadelphia. He is said to be retiring on account of ill health. Mr. Richards is a native of Schuylkill County, Pennsylvania, having been a resident of Minersville in his youth and learned the mining business there as a mining engineer. He afterward became head of the Lehigh & Wilkes-Barre Coal Co. and upon the retirement of R. C. Luther as general manager of the Philadelphia & Reading Coal & Iron Co. he was made general manager at Pottsville. Upon the death of Mr. Luther he was elected a vice-president and when the segregation of the railroad and coal companies went into effect he became president of the Coal & Iron Co., retaining the active business management of the company.

Daniel Kilgore, former secretary of the Virginia Coal Operators' Association and one of the prime movers in its organization, has been named Southern sales agent of the Whitney-Kemmerer Coal Co., and will maintain his office at Charlotte, N. C., according to an announcement made by John Taggart, manager of the Southern territory of the Whitney-Kemmerer organization.

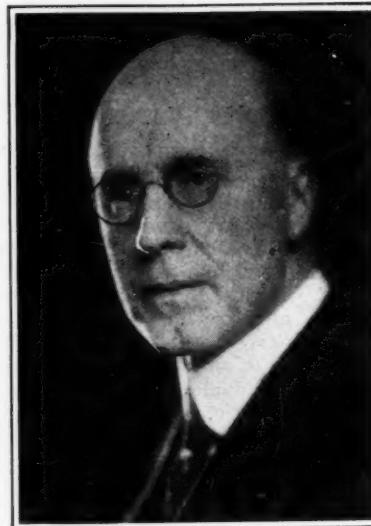
Lord Gainford, president of the Federation of British Industries; **Colonel Sir George Courthope, M.P.**; **Richard Pease** and **H. Crewdson Howard**, British industrial men, arrived in New York on the *Berengaria* June 3 on their way to Ontario, Canada, to make a survey of coal and iron mining properties. They declined to give details of their mission, but said if the deal was concluded it would be made public in Montreal. Lord Gainford said the industrial situation in Great Britain was improving, which was attested by less unemployment.

J. C. Gaskill, more familiarly known as Uncle Neil, has resigned his post as consulting engineer with the Consolidation Coal Co. at Fairmont, W. Va., and will retire from active service. He has seen 62 years in the coal business, the last 40 in the service of the Consolidation interests.

C. H. Tarleton has resigned as general manager in West Virginia for the Consolidation Coal Co., after 39 years of continuous service in that field. In 1888 he took a job as mule driver in the old Gaston mine, then operated by the Watsons. As mine inspector for the company at the time of the Monongah explosion in 1907 he did heroic work. He expects to take a long rest on account of ill-health. He will be succeeded by **F. F. Jorgensen**, who has been his assistant for several months.

H. C. Terry has been appointed Eastern sales agent of the Lehigh Valley Coal Sales Co. with offices at 141 Milk St., Boston, Mass. He succeeds **H. P. Myers**, who resigned to retire from active service. Mr. Terry started in the coal business in 1896 as salesman

for the Philadelphia & Reading Coal & Iron Co. at New Bedford. Six years later he joined the sales force of Percy Heilner & Son, with whom he also was associated for six years. He then joined the Lehigh Valley Coal Co. taking charge of distribution in all the territory reached by the Boston & Maine R.R. Mr. Myers, who is about 75 years old, had been with the company 34 years.



Senator Oddie

Senator Oddie (Rep., Nevada), chairman of the Senate Mines and Mining Committee, is taking up with mining organizations questions bearing on legislation and appropriations for the mining industry to be considered at the next session of Congress. The Senator is anxious that the mining interests present a united front on these matters in order particularly that increased funds may be obtained for investigational work by the Bureau of Mines.

Henry P. Cannon recently was elected a vice-president of Castner, Curran & Bullitt, Inc. Mr. Cannon has long been associated with the New England Coal trade, having been a manager for the New River Consolidated Coal Co. and, up to the present time, the New England manager of the Castner, Curran & Bullitt business.

F. M. Miller, who has been in charge of the Western office of the Raleigh Smokeless Coal Co. at Cincinnati, Ohio, for some time, will return to Norfolk, Va., where he was formerly located with this company. He has been succeeded by **Roy L. Cox**. Mr. Cox for the past six years was connected with the Jeffery Manufacturing Co. of Columbus, Ohio.

A. C. Cook, resident manager for the Norfolk & Chesapeake Coal Co. at Cincinnati, Ohio, has severed his connection with that company. He was for five years connected with it at its mines in Logan County, West Virginia, and also with the Red Jacket Coal Co. in the same territory.

Obituaries

Angus W. Kerr, chief counsel of the United Mine Workers in Illinois, died at Springfield, Ill., May 30 following an operation. Mr. Kerr joined the Illinois mine workers as chief counsel in 1914. He helped secure the passage of Illinois Workmen's Compensation Act and also organized the legal department of the union so as to collect promptly from operators money due members of the union. At the time of his death Mr. Kerr was a member of the Illinois Crime Commission and an Associate Attorney General. Prior to going to Illinois he was a member of the Michigan State Legislature and Public Prosecutor of Houghton County, Michigan. He was chief counsel for the Western Federation of Miners during the great copper strike in the upper Michigan peninsula.

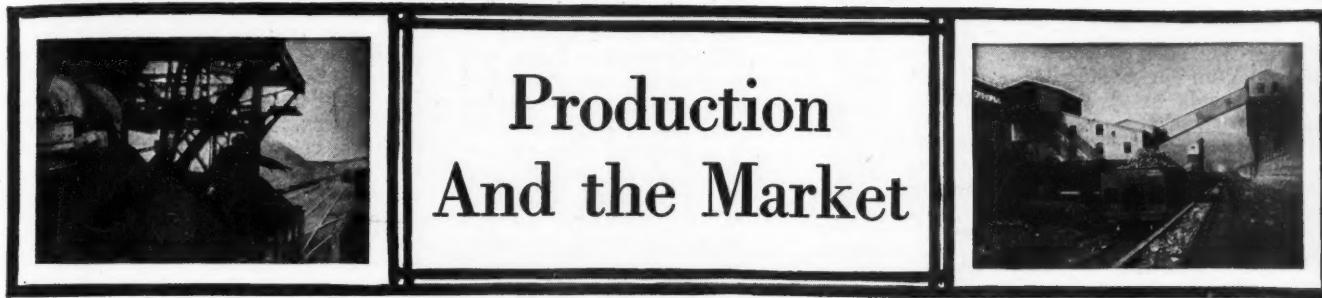
William G. Richards, one of the organizers of the United Mine Workers and the oldest dues paying member of that organization, died at his residence, in Columbus, Ohio, late in May after a lingering illness of many months. He was 66 years of age and was national organizer at the time of his death. He started to work in the mines at Johnstown, Pa., at the age of 9 years as a trapper boy. Later he became a full-fledged miner and moved to the Hocking field and was a member of the Knights of Labor before it was merged into the United Mine Workers. He was in charge of advertising on the *Mine Workers' Journal* for a number of years. He had been a resident of Columbus for 30 years. He leaves a widow, two daughters and three brothers.

Trade Literature

The following bulletins have been issued by the General Electric Co., Schenectady, N. Y.: Combination Trolley Wire Suspension and Guard Board Support for Mines, GEA-751. CRI034-KI Hand Starting Compensators for Squirrel-Cage Induction Motors, GEA-140. CR7051 Automatic Starting Compensators for squirrel-cage induction motors, two and three-phase, GEA-416A. Squirrel-Cage Motors "500 Series," GEA-6. CR3204 Drum-Type Control Equipment for Two- or Three-Phase Wound-rotor Induction Motors, GEA-250. Type Mt Control Equipments, for D-C series-wound crane hoist motors, GEA-530A. Hand Starting Compensators, dead-front cabinet type for squirrel-cage induction motors, GEA-570. CR9511 Shoe-Type Solenoid Brakes for direct-current motors, GEA-753.

Publications Received

Geology and Mineral Resources of the Dixon Quadrangle, by Russell S. Knappen. Department of Registration and Education, Division of the State Geological Survey, Urbana, Ill. Bulletin No. 49. Pp. 141; 6x10 in.; illustrated.



Rate Decision Holds Attention of Coal Trade In Market Devoid of Feature

Current market developments in the bituminous coal industry of the United States last week were overshadowed by interest in the lake cargo decision. The Interstate Commerce Commission's action in ordering a reduction of 20c. per net ton in rates on coal from the Pittsburgh, Ohio No. 8 and Cambridge districts to lower lake ports has been productive of the usual division of opinion.

Producers benefited by the decision express gratification that there was a cut, though insistent in most cases that it should have been larger. Southern West Virginia and Kentucky operators, however, have raised a storm of protest, characterizing the order as little short of a knockout blow to the industry in that territory. Steps are being taken to have the decision set aside, failing which it is likely that an effort will be made to have the roads serving Southern territory meet the reduction with a voluntary cut. The Commission did not forbid such action, merely expressing the opinion that such a reduction would not be justified at this time. In any event it is certain that there will be developments of interest before the effective date of the order—Aug. 10.

Lake Dumpings Increase

The decision will have relatively no effect as a market factor in the lake trade this year, as practically all this business is already on contract. It is

interesting to note, however, that this business is about the only active feature of the market. Dumpings at the lower lake ports during the week ended at 7 a.m., June 6, included 1,229,516 net tons of cargo and 48,790 tons of vessel fuel, compared with 1,222,991 and 52,960 respectively, the week before.

Seasonal Dullness Prevails

Seasonal quiet characterized current developments in most of the markets of the country last week. West Virginia smokeless easily maintained its place as the topliner, with prices slightly firmer due to closer adjustment of production to demand. Kentucky and West Virginia high-volatile coals showed comparatively little change; as this is written it is too early to appraise the effect of the flood as a market factor. There was no appreciable increase in demand in the Middle West, though increased inquiry brought about a better market tone. A slight easing of buying resistance has appeared at Pittsburgh, without noticeable effect on total turnover or prices. The Atlantic seaboard markets are marking time, hopeful of an improvement this month.

Coal Age Index of spot bituminous prices as of June 6 was fractionally lower at 153, with the corresponding weighted average price \$1.85. The figures for the preceding week were 153 and \$1.86.

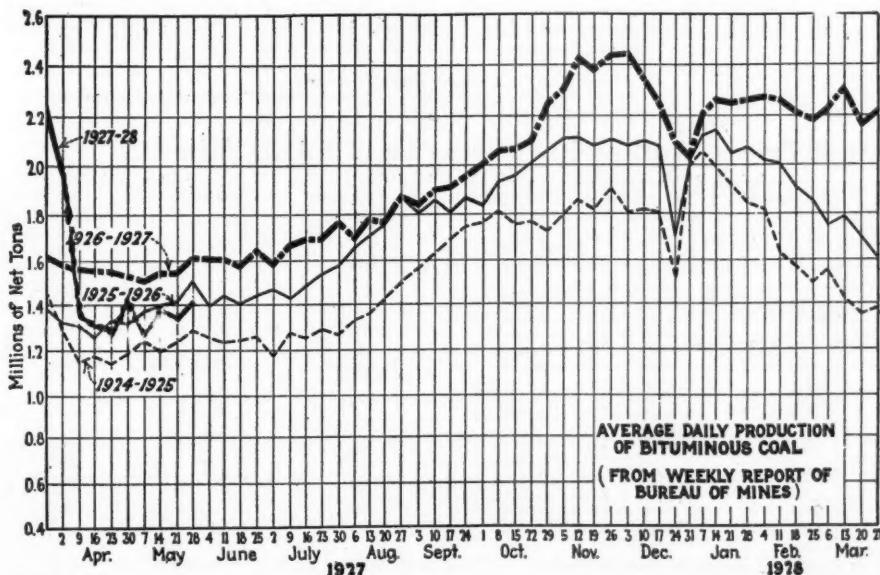
Bituminous coal production during the week ended May 28 was estimated by the U. S. Bureau of Mines at 8,474,000 net tons, an increase of 201,000 tons over the total for the preceding week. Loadings the first two days of last week dropped sharply because of observance of Memorial Day.

There has been virtually no change in the labor situation in the union fields. Negotiations will be resumed by central Pennsylvania miners and operators at Philadelphia next week, when efforts will be renewed to arrange a working agreement. What effect, if any, the lake cargo decision will have on the outcome of the parley remains to be seen.

Buying Reacts in Hard Coal

After the flurry of buying in the domestic anthracite market in anticipation of the advance in prices on June 1 there was an appreciable let-down last week. Most operators have unfilled orders on hand, however. Stove is in best demand and egg is holding up well. Pea also enjoys an active demand. The situation in the steam sizes is easy.

In the Connellsville beehive coke market demand is very low and prices are notably soft. Demands by furnace men that wages be lowered in order that prices may be reduced are opposed by leading ovens, and a battle looms over third-quarter contracts.



Estimates of Production

(Net Tons)

BITUMINOUS

	1926	1927
May 14.....	9,299,000	8,402,000
May 21 (a).....	9,282,000	8,273,000
May 28 (b).....	9,683,000	8,474,000
Dily average.....	1,614,000	1,412,000
Cal. yr. to date (c).....	222,924,000	237,959,000
Daily av. to date.....	1,771,000	1,890,000

ANTHRACITE

May 14.....	1,904,000	1,989,000
May 21 (a).....	1,750,000	1,970,000
May 28 (b).....	2,089,000	1,840,000
Cal. yr. to date (c).....	27,295,000	33,303,000

BEEHIVE COKE

May 14.....	203,000	148,000
May 21 (a).....	211,000	154,000
May 28 (b).....	194,000	125,000
Cal. yr. to date (c).....	5,728,000	3,790,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

Firmer Undertone in Midwest

There has been scarcely any noticeable pick-up in demand for Middle Western coals in the Chicago market and quotations remain at recent prevailing levels. There is a firmer undertone, however, due to a fair volume of inquiry for prepared sizes, largely from the railroads, and for fine coals by smaller industrial consumers.

Western Kentucky operators are not making much of an impression in this market. Screenings are not strong and the prepared sizes are comparatively easy. Coals from eastern Kentucky and the West Virginia high-volatile fields are not much better off, finding it necessary to bring considerable pressure to get business.

Low-volatile prepared sizes are firm and spot offerings are limited. Shipments on contracts continue in good volume, though the flow of mine-run has slowed up somewhat. The decision of smokeless shippers not to raise contract prices for June has created good

feeling and had a stabilizing influence.

Practically all the unsold tonnage in the southern Illinois field is lump and egg. There is little, if any, unbilled steam sizes and only a small surplus of nut. The railroads, however, still carry a heavy supply of mine-run on wheels. The situation in the DuQuoin and Jackson County districts closely parallels that in southern Illinois proper. Movement out of the Mt. Olive field is slow and no inroads have been made upon ground storage except tonnage covered by industrial orders.

The Standard field has cleaned up all sizes but mine-run and the larger domestic offerings. Sale of this coal is held down by the competition from western Kentucky mines. Prices are unchanged. Inclement weather has helped the local St. Louis retail market and even aroused some interest in forward buying, but most of the coal sold has been taken from retail stockpiles. Carload steam trade is slow. Country business, both industrial and domestic, is sluggish.

Heavy rains caused earth-slides which are seriously interfering with the shipment of coal from some parts of the eastern Kentucky field, but this curtailment in output has not led to any firmer prices. A slight improvement in demand is reported in the western Kentucky field, but the increase has not been enough to support an upward movement in spot quotations. Industrial buying is not up to expectations and current railroad consumption is not exceptionally heavy.

Outlook Favorable in Northwest

The Head of the Lakes takes a cheerful view of the market situation. Preliminary estimates of the volume of tonnage distributed from the docks to Northwestern retailers and industrial consumers last month make May one of the most satisfactory periods in recent dock history. June orders so far booked give every indication that the current month's business will be on a very favorable basis.

Prices on anthracite egg, stove and

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern		Market Quoted	June 7, 1926	May 23, 1927	May 30, 1927	June 6, 1927†	Midwest	Market Quoted	June 7, 1926	May 23, 1927	May 30, 1927	June 6, 1927†
Smokeless lump	Columbus	\$3.10	\$3.60	\$3.50	\$3.25@ \$3.50		Franklin, Ill. lump	Chicago	\$2.60	\$3.15	\$3.15	\$3.15
Smokeless mine-run	Columbus	2.05	2.20	2.25	2.10@ 2.50		Franklin, Ill. mine-run	Chicago	2.25	†	†	†
Smokeless screenings	Columbus	1.25	1.10	1.10	1.00@ 1.25		Franklin, Ill. screenings	Chicago	1.65	†	†	†
Smokeless lump	Chicago	3.00	3.35	3.35	3.25@ 3.50		Central, Ill. lump	Chicago	2.30	2.85	2.85	2.75@ 3.00
Smokeless mine-run	Chicago	1.90	1.90	1.90	1.80@ 2.00		Central, Ill. mine-run	Chicago	2.05	†	†	†
Smokeless lump	Cincinnati	3.10	3.35	3.50	3.25@ 3.50		Central, Ill. screenings	Chicago	1.75	†	†	†
Smokeless mine-run	Cincinnati	2.00	2.25	2.25	2.25		Ind. 4th Vein lump	Chicago	2.40	3.05	3.05	3.00@ 3.15
Smokeless screenings	Cincinnati	1.35	1.85	1.85	1.75@ 2.00		Ind. 4th Vein mine-run	Chicago	2.15	†	†	†
Smokeless mine-run	Boston	4.50	4.40	4.40	4.40@ 4.60		Ind. 4th Vein screenings	Chicago	1.80	†	†	†
Clearfield mine-run	Boston	1.80	1.70	1.70	1.65@ 1.80		Ind. 5th Vein lump	Chicago	2.15	2.65	2.65	2.60@ 2.75
Cambria mine-run	Boston	2.05	2.05	2.05	1.85@ 2.20		Ind. 5th Vein mine-run	Chicago	1.95	2.10	2.10	2.00@ 2.25
Somerset mine-run	Boston	1.90	1.85	1.85	1.75@ 2.00		Ind. 5th Vein screenings	Chicago	1.40	1.90	1.90	1.85@ 2.00
Pool 1 (Navy Standard)	New York	2.60	2.75	2.75	2.50@ 2.75		Mt. Olive lump	St. Louis	2.35	3.00	3.00	3.00
Pool 1 (Navy Standard)	Philadelphia	2.65	2.85	2.80	2.70@ 2.95		Mt. Olive mine-run	St. Louis	2.15	3.00	3.00	3.00
Pool 1 (Navy Standard)	Baltimore	2.00	2.15	2.15	2.10@ 2.25		Mt. Olive screenings	St. Louis	1.55	2.00	2.00	2.00
Pool 9 (Super. Low Vol.)	New York	2.05	2.05	2.05	1.90@ 2.15		Standard lump	St. Louis	2.25	2.75	2.75	2.75
Pool 9 (Super. Low Vol.)	Philadelphia	2.10	2.15	2.05	1.85@ 2.25		Standard mine-run	St. Louis	1.80	2.00	2.00	2.00
Pool 9 (Super. Low Vol.)	Baltimore	1.80	1.80	1.80	1.75@ 1.85		Standard screenings	St. Louis	1.30	1.75	1.75	1.75
Pool 10 (H. Gr. Low Vol.)	New York	1.85	1.75	1.75	1.65@ 1.90		West Ky. block	Louisville	1.75	1.85	1.85	1.75@ 2.00
Pool 10 (H. Gr. Low Vol.)	Philadelphia	1.85	1.80	1.75	1.65@ 1.90		West Ky. mine-run	Louisville	1.20	1.50	1.50	1.40@ 1.60
Pool 10 (H. Gr. Low Vol.)	Baltimore	1.65	1.65	1.65	1.60@ 1.70		West Ky. screenings	Louisville	1.10	1.50	1.50	1.40@ 1.60
Pool 11 (Low Vol.)	New York	1.65	1.60	1.60	1.50@ 1.75		West Ky. block	Chicago	1.75	1.65	1.65	1.60@ 1.75
Pool 11 (Low Vol.)	Philadelphia	1.55	1.65	1.60	1.50@ 1.70		West Ky. mine-run	Chicago	1.15	1.40	1.40	1.35@ 1.45
Pool 11 (Low Vol.)	Baltimore	1.60	1.55	1.55	1.50@ 1.60							

High-Volatile, Eastern

Pool 54-64 (Gas and St.)	New York	1.40	1.45	1.45	1.35@ 1.60	
Pool 54-64 (Gas and St.)	Philadelphia	1.45	1.45	1.45	1.35@ 1.60	
Pool 54-64 (Gas and St.)	Baltimore	1.40	1.50	1.50	1.30@ 1.45	
Pittsburgh sc'd gas	Pittsburgh	2.25	2.50	2.50	2.40@ 2.60	
Pittsburgh gas mine-run	Pittsburgh	2.00	2.20	2.20	2.15@ 2.25	
Pittsburgh slack (Gas)	Pittsburgh	1.80	2.10	2.05	2.00@ 2.10	
Kanawha lump	Columbus	2.05	2.35	2.35	2.25@ 2.50	
Kanawha mine-run	Columbus	1.55	1.60	1.40	1.35@ 1.50	
Kanawha screenings	Columbus	1.05	1.25	1.15	1.10@ 1.25	
W. Va. lump	Cincinnati	2.25	2.10	2.10	1.75@ 2.50	
W. Va. gas mine-run	Cincinnati	1.50	1.60	1.60	1.30@ 1.50	
W. Va. steam mine-run	Cincinnati	1.35	1.35	1.40	1.20@ 1.75	
W. Va. screenings	Cincinnati	1.15	1.15	1.20	1.00@ 1.25	
Hocking lump	Columbus	2.35	2.25	2.25	2.00@ 2.50	
Hocking mine-run	Columbus	1.55	1.85	1.80	1.75@ 1.90	
Hocking screenings	Columbus	1.10	1.25	1.30	1.25@ 1.40	
Pitts. No. 8 lump	Cleveland	2.15	†	†	†	
Pitts. No. 8 mine-run	Cleveland	1.70	†	†	†	
Pitts. No. 8 screenings	Cleveland	1.25	†	†	†	

South and Southwest

Big Seam lump	Birmingham	2.30	2.15	2.15	2.25@ 2.50
Big Seam mine-run	Birmingham	1.85	1.70	1.70	1.50@ 1.90
Big Seam (washed)	Birmingham	1.85	1.85	1.85	1.75@ 2.00
S. E. Ky. block	Chicago	2.40	2.20	2.20	2.10@ 2.35
S. E. Ky. mine-run	Chicago	1.65	1.50	1.50	1.40@ 1.65
Louisville	Louisville	2.00	2.25	2.25	2.00@ 2.50
Louisville	Louisville	1.35	1.60	1.55	1.40@ 1.75
S. E. Ky. screenings	Louisville	1.15	1.20	1.20	1.10@ 1.35
S. E. Ky. block	Cincinnati	2.15	2.05	2.10	1.75@ 2.50
S. E. Ky. mine-run	Cincinnati	1.50	1.55	1.55	1.25@ 1.85
S. E. Ky. screenings	Cincinnati	1.10	1.15	1.20	1.00@ 1.30
Kansas lump	Kansas City	4.00	4.35	4.35	4.25@ 4.50
Kansas mine-run	Kansas City	3.00	2.85	2.85	2.75@ 3.00
Kansas screenings	Kansas City	2.50	2.50	2.50	2.65

*Gross tons, f.o.b. vessel, Hampton Roads.

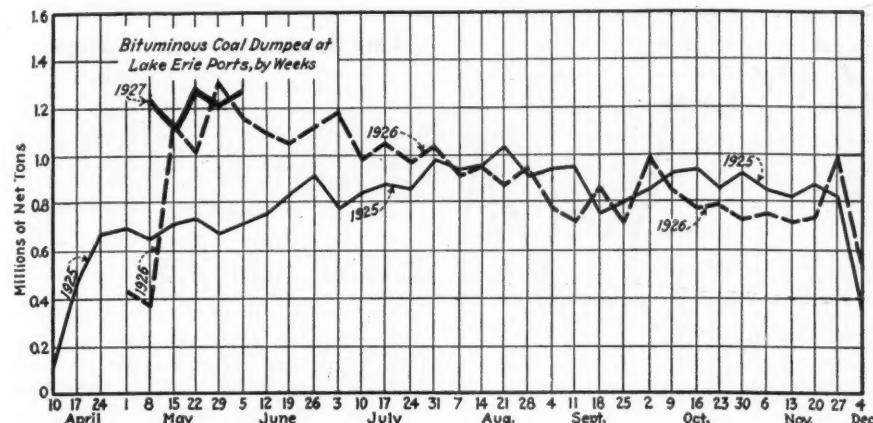
†Advances over previous week shown in **heavy type**; declines in **italics**.

‡Quotations withdrawn because of strike.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

Market Quoted	Freight Rate	June 7, 1926	Independent Company	May 30, 1927	Independent Company	June 6, 1927†	Independent Company
Broken	New York	\$2.34	\$8.25@ \$9.25	\$8.25@ \$8.50
Broken	Philadelphia	2.39	\$9.25	8.50@ 9.15	8.25@ 8.50	8.50@ 8.75	8.50@ 8.75
Egg	New York	2.34	8.75@ 9.25	8.75@ 9.25	\$8.25@ \$8.50	8.25@ 8.35	\$8.25@ \$8.50
Egg	Philadelphia	2.39	9.15@ 9.85	9.00@ 9.15	8.25@ 9.00	8.25@ 8.35	8.50@ 9.00
Egg	Chicago*	5.06	8.48	8.13	7.63	7.63	7.63
Stove	New York	2.34	9.25@ 9.75	9.25@ 9.50	8.60@ 8.95	8.75@ 8.95	8.75@ 9.00
Stove	Philadelphia	2.39	9.40@ 10.30	9.35@ 9.50	8.85@ 9.50	8.85	9.10@ 9.50
Stove	Chicago*	5.06	8.84	8.33@ 8.58	8.08	8.08	8.08
Chestnut	New York	2.34	8.75@ 9.25	8.75@ 9.15	8.25@ 8.50	8.25@ 8.35	8.25@ 8.60
Chestnut	Philadelphia	2.39	9.00@ 10.05	9.00@ 9.15	8.25@ 9.00	8.25@ 8.35	8.50@ 9.00
Chestnut	Chicago*	5.06	8.71	8.38@ 8.53	7.63	7.63	7.63
Pea	New York	2.22	6.25@ 7.00	6.00@ 6.25	5.50@ 6.50	6.00@ 6.50	5.50@ 6.50
Pea	Philadelphia	2.14	6.25@ 6.75	6.00@ 6.35	6.00@ 6.75	6.00	6.25@ 6.75
Pea	Chicago*	4.79	6.03	5.65@ 5.80	6.10	6.10	6.10
Buckwheat No. 1	New York	2.22	1.75@ 2.25	3.00@ 3.50	2.35@ 2.75	2.50@ 3.00‡	2.35@ 2.65
Buckwheat No. 1	Philadelphia	2.14	2.15@ 2.50	2.50@ 2.75	2.50@ 3.00	2.50	2.50@ 3.00
Rice	New York	2.22	1.50@ 1.85	2.00@ 2.25	1.60@ 1.90	2.00@ 2.25	1.65@ 1.90
Rice	Philadelphia	2.14	1.75@ 2.00	2.00@ 2.25	2.00@ 2.75	2.00@ 2.25	1.90@ 2.50
Barley	New York	2.22	1.20@ 1.50	1.50@ 1.75	1.15@ 1.45	1.50@ 1.75	1.15@ 1.40
Barley	Philadelphia	2.14	1.50@ 1.75	1.50@ 1.75	1.50@ 1.75	1.50@ 1.75	1.50
Barley	New York	2.22	1.30@ 1.60	2.00	1.40@ 1.60	1.40@ 1.60	1.40@ 1.60

*Net tons, f.o.b. mines. †Advances over previous week shown in **heavy type**; declines in **italics**. ‡Domestic buckwheat (D. L. & W.), \$3.50



nut have been marked up 25c. Local retail prices at Duluth now are: Egg, \$15.40; stove, \$15.65; nut, \$15.75; pea, \$14.15; buckwheat, \$10.25. The increased inquiry for buckwheat, as a result of the educational campaign launched last spring, has reached the point where some factors are considering the advisability of ordering some tonnage from the mines. There also is a stronger demand for smokeless coal from household consumers. Coke, too, is attracting more attention.

too, is attracting more attention.

Aside from a little contracting last week the Twin Cities market seemed to be in a waiting mood. Industrial demand in the spot market continues slack. There has been moderate activity in domestic grades due to exceptionally cool weather. The trade in Milwaukee is seasonally quiet, with demand about normal. Smokeless continues to enjoy the major share of popular favor with prices unchanged. Quotations for anthracite were advanced 25c. June 1 on egg, stove and nut.

Kansas Strip Pits Busier

Kansas stripping operations are increasing their output and find a ready market for screenings at \$2.65 and crushed mine-run at \$2.75. Railroad buying continues to be the mainstay of the Oklahoma mines. June prices on Oklahoma coal show no change from May quotations. The summer schedules in Arkansas have developed little new business from retail distributors or domestic consumers.

Utah mines are averaging slightly less than half time. Demand for industrial coal is still so far below normal that many mines are compelled to dump slack on the ground to take care of orders for screened sizes. Forehanded householders are taking advantage of summer retail prices, but most of the buying is for current consumption. Utah railroads report over 600 "no bills" on their tracks.

Discussion of the decision of the Interstate Commerce Commission in the lake cargo case almost obscured consideration of actual market developments in Cincinnati last week. The latter were not favorable. The rise in spot prices on prepared sizes of smokeless was checked and lump and egg moved at \$3.25 @ \$3.50, while stove, quoted at \$3 in the June circulars, sold at \$2.50 @ \$2.75. Nut demand was slow. There was no change in the mine-run situation.

The rate decision caused southern West Virginia high-volatile producers

to abandon any idea of an immediate increase in prices on prepared sizes. The steam coal list was a little easier last week. The floods and cloudbursts in the Big Sandy and Hazard sections reduced the offerings of eastern Kentucky coal and so maintained the market on those grades, although slack weakened slightly.

Car Interchange Climbing

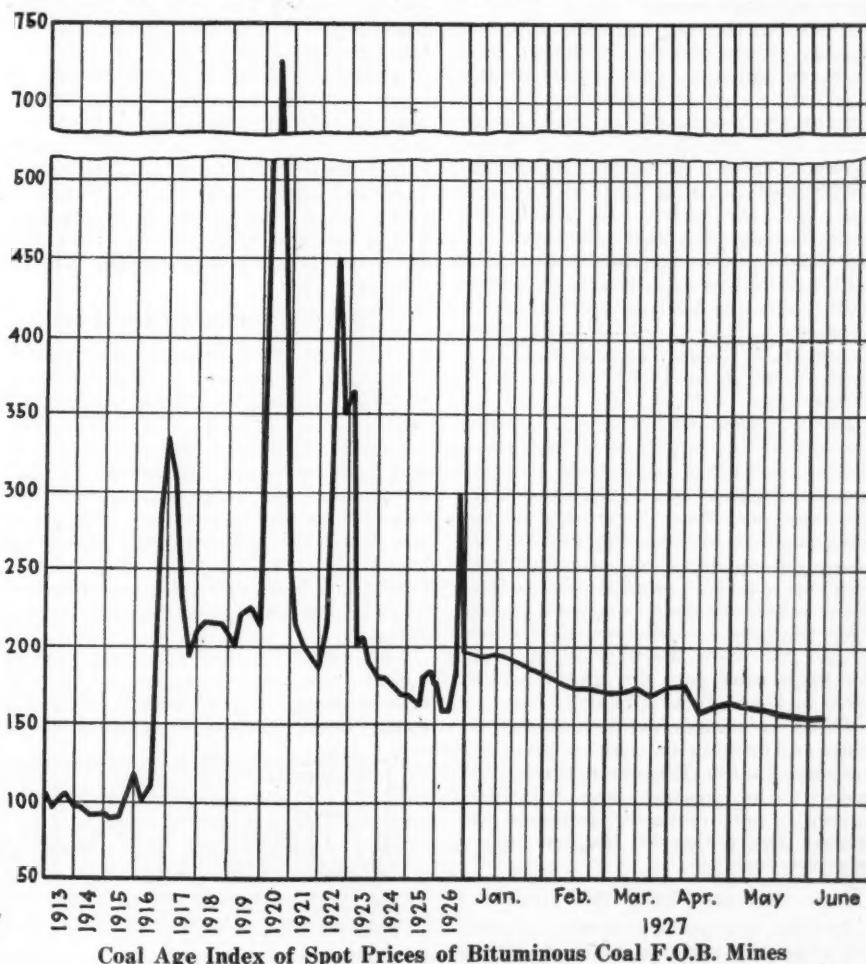
Coal movement through the Cincinnati gateway last week totaled 16,219

cars, an increase of 203 over the preceding week and 2,637 more than during the same week last year. Interchange on the Louisville & Nashville increased 396 and on the Norfolk & Western, 152; on the Chesapeake & Ohio there was a decrease of 258 and on the Southern, 87. Included in the movement were 5,187 cars en route to the lakes, an increase of 1,003 over the preceding week. The number of empties en route to the mines decreased from 15,734 to 14,972 cars.

Domestic Consumers Canny Buyers

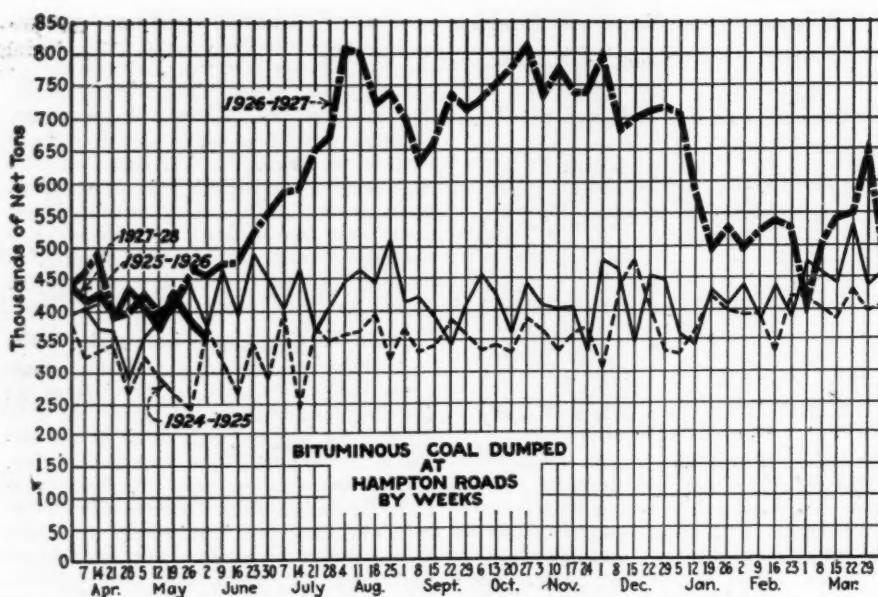
Activity in the buying of domestic sizes has not pushed up the prices on the limited quantities of Ohio coal now offered for shipment as most of the demand centers on West Virginia grades. Canny purchasers wait for lake embargoes and pick up distress tonnage at bargain figures. The steam trade in and around Columbus continues dull and draggy. Here, too, alert buyers are able to add to their supplies by purchases of distress lots.

Even with bargain prices prevailing, northern and eastern Ohio consumers display little interest in the spot market. Consumers are well stocked and inquiries for both steam and domestic



	1927				1926	1925
	June 6	May 30	May 22*	May 16*	June 7	June 8
Index	153	153	154	155	157	161
Weighted average price	\$1.85	\$1.86	\$1.86	\$1.88	\$1.90	\$1.95

This diagram normally shows the relative, not the actual, price on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportion each of slack, prepared and run of mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918" published by the Geological Survey and the War Industries Board. Owing to the suspension of operations in certain unionized fields the figures since April 2 have been reweighted to cover present-day tonnage. Figures for May 30 and June 6 are tentative only. *Revised.



grades are few and far between. Little distress coal is in evidence. Inability to dispose of screenings has resulted in curtailed lump output and consequent firmness in quotations.

While the total turnover of coal in the Pittsburgh market shows little or no increase, buying resistance is less strong. Price levels, however, have shown no advance. More strip tonnage is offered at prices averaging 20c. under the shaft-mine coal. The spot demand for Connellsburg coal is weak. Group 1 mines in the Bessemer district report a rising demand for lump coal, but the prices at which this product moves are unsatisfactory.

Output in the central Pennsylvania field in May was 52,918 cars, as against 53,482 cars in April. Current quotations are: Pool 1, \$2.50@\$2.65; pools 11 and 18, \$1.65@\$1.70; pool 10, \$1.85@\$1.95; pool 9, \$2.10@\$2.20; pool 71, \$2.30@\$2.45.

Buffalo remains in the doldrums. The undertone in the slack market is weaker, but actual quotations show no great softening. As a matter of fact, the range on West Virginia coal last week was 5 to 10c. higher and the maximum on Youghiogheny gas slack went up a nickel. Buffalo, in common with other Eastern markets, seized upon the lake rate decision as a choice morsel for trade discussion, but could see little real gain for the Northern fields in the reduction ordered.

There is a moderate but steady demand for bituminous coal for industrial purposes in the Toronto market. Unusually cool weather has stimulated buying of anthracite by domestic consumers, too, with sales heavier than at this time last year.

New England Quiet but Hopeful

In New England the steam coal market continues without material change. Beneath the surface, however, there is a feeling in the trade that during June a gradually firmer tendency will be in evidence.

At Hampton Roads the accumulations of late May have now been cleaned up, and first of the month quotations, as usual, are somewhat firmer. The most favorably known coals of No. 1 Navy Standard grade are being held at \$4.50@\$4.60 per gross ton f. o. b. vessel,

while coals not so good can be bought at \$4.25@\$4.40.

For inland delivery from Boston, Providence and Portland the price on cars varies from \$5.60 to \$5.75. A few factors are able to get \$6 for small lots, but no user of any size is obliged today to pay more than \$5.75. A few large consumers in position to take coal in considerable lots are able to buy at lower figures in cases where factors have coal they are obliged to move, either to relieve ships or to find storage for cargoes that are coming along.

All-rail coals from central Pennsylvania show no appreciable change. Output is very light, and only in a few directions is there any demand for the present.

Upturn Expected in New York

The New York bituminous market is looking forward to a better volume of trade this month although prices on pools 1 and 9 have weakened. The failure of the recent conference of central Pennsylvania interests to negotiate a new wage agreement has caused some anxiety among consumers and increased spot demand. Contract buyers are taking their full quotas. Consumers generally seem less disposed to make heavy inroads into their stockpiles.

Consumers buying through Philadelphia have not been stirred by the adjournment of the central Pennsylvania wage conference and shippers

Car Loadings and Supply

	Cars Loaded	Surplus Cars	Car Shortages	
	All Cars	Coal Cars	All Cars	Coal Cars
Week ended May 21, 1927	1,016,803	161,588		
Week ended May 14, 1927	1,029,126	163,150		
Week ended May 22, 1926	1,039,385	165,212		
Week ended May 15, 1926	1,030,162	167,673		
May 23, 1927	248,771	77,304		
May 15, 1927	245,487	78,404		
May 23, 1926	259,788	82,304		

still complain that the promised revival in large-scale buying is continually postponed. It is admitted, however, that the number of inquiries is increasing. Moreover, public utility plants are keeping up their stockpiles and, in some cases, adding to them. The railroads also are buying liberally through regular channels.

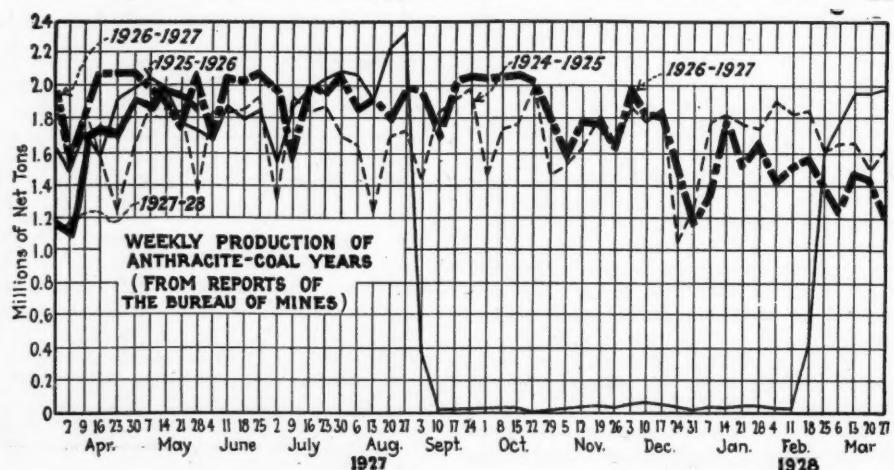
Dullness is the outstanding characteristic of the Baltimore bituminous market. Buyers find no difficulty in acquiring all the spot tonnage they need, so there is no incentive to increase orders or to tie up under contracts. The export trade is dead. There have been no foreign clearances since the last of April and no new business for shipment abroad is in sight.

The Birmingham district trade is now a contract proposition. Spot orders are so few and so widely distributed that they are of little benefit to individual operations. June commitments on domestic tonnage are below the totals for other years, but the outlook for second-quarter business is better. Mine prices were advanced on June 1, making Big Seam lump, \$2.25@\$2.50; Carbon Hill, \$2.80; Cahaba, \$3.90@\$4.40; Black Creek, \$4.15; Corona, \$3.05; Montevallo, \$4.65@\$5.15.

Letdown in Anthracite Buying

The heavier buying of domestic sizes which featured trade in the New York anthracite market the latter part of May has been followed by a let-down since June advances in prices were made. All but one of the larger companies increased their circulars 25c. This one company, which had advanced prices 10c. on May 1, made a second increase of 10c. on June 1. Independent shippers have many unfilled orders on hand. Steam sizes are easy.

Buying slowed up somewhat also at Philadelphia, but most operators have a backlog of orders on their books. Stove leads in demand and the call for egg



Says Prosperity Hangs On Workers' Wage

"America owes everything it has to the pay envelopes of the 42,000,000 men and women workers of the country," declared James J. Davis, Secretary of Labor, in a recent address before the Philadelphia Lodge of the Loyal Order of Moose.

High wages are the source of American prosperity in the opinion of Mr. Davis. In decrying the ideas of the advocates of low wages, the secretary charged that they are entirely out of accord with the American standard of living.

"What we need in this country is increased wages," Mr. Davis averred. "We should put into the pay envelope all we can. Such a system enables the people to live independently of Government aid."

holds up surprisingly well. Notwithstanding the fact that little pea is being consumed at this time, there still is an active demand for this size. In many cases retailers have absorbed the June advances in wholesale prices. Steam sizes are easy, but there is little or no distress tonnage. Some of the company shippers have raised their price on No. 1 buckwheat to \$2.75.

Consumer demand for anthracite in Baltimore continues light and retail yard stocks are ample. Buying has dwindled at Buffalo with the turn of the month, as retailers find scant support from the householder in their efforts to promote early fill-ups. Lake shipments declined last week. Only three cargoes, totalling 19,000 tons, were cleared.

Fight Looms on Coke Contracts

The Connellsville coke market has not escaped the trough of demand. Spot furnace does not rise above the \$2.85@\$3 range and some sales are made at lower figures. Leading ovens oppose the demands of the furnacemen for a reduction in wages which will make possible lower prices, and a fight over third-quarter contracts is in the offing. Spot foundry coke holds at \$4@\$4.75, but the demand is poor. There is, however, a fairly active inquiry for non-metallurgical coke particularly for gas-making.

Beehive coke production in the Connellsville and Lower Connellsville region during the week ended May 28 was 106,680 net tons, according to the Connellsville *Courier*. This was an increase of 4,430 tons over the preceding week—and the first upturn in output since the week ended March 19. All of the increase, however, came from the furnace ovens; merchant-oven output declined 2,170 tons.

Demand for foundry coke in the Birmingham district is good for this season of the year and quotations are firm at \$5.50 for contract and \$6 for spot tonnage. Domestic buying is slow.

Wholesalers Meet in Toronto And Elect Legg President

With about 100 coal men from various sections present, the American Wholesale Coal Association held its eleventh annual convention at the King Edward Hotel, Toronto, Canada, June 1 and 2. Mayor Foster welcomed the visitors in a brief address, extending the freedom of the city to them. This courtesy included the privilege of patronizing the liquor dispensing places established under a new provincial law.

G. H. Merryweather, in his presidential address, commented on the appropriateness of holding the meeting in Toronto, which, although outside the boundaries of the United States, has much the same trade problems. He decried the difficulties of bringing new members into the organization and urged the present members to bend every effort to bring in others to increase the prestige of the organization.

R. B. Starek, secretary-treasurer, stated that there had been a slight gain in membership during the last year.

Largely as a result of the co-operative efforts of the three national associations of the industry, said Ira Cochran, commissioner of the association, "coal stands today in higher favor with the general public than at any time since the World War." He added that although a beginning in improved public relations has been made, much more remains to be accomplished.

Nathan B. Williams, of Washington, associate counsel of the National Association of Manufacturers, deprecated the voluminous output of statutes, laws and regulations, which tends to destroy respect for all law.

Fred H. Legg of Cincinnati, Ohio, was elected president, and George E. Copeland of Boston, vice-president. R. B. Starek of Chicago was re-elected secretary-treasurer.

Owen D. Young Says Unemployment Is Darkest Blot Defacing Our Capitalistic System

The waste and suffering induced by unemployment was labeled as "the greatest economic blot on our capitalistic system" by Owen D. Young, chairman of the board of directors of the General Electric Co. in his recent address dedicating the new buildings erected under the George F. Baker Foundation for the Harvard Business School.

"Gradually we are reducing the area of conflict between capital and labor," said Mr. Young. "Slowly we are learning that low wages for labor do not necessarily mean high profits for capital. We are learning that an increasing wage level is wholly consistent with a diminishing commodity price level.

"We are learning that productivity of labor is not measured alone by the hours of work, or even by the test of physical fatigue in a particular job. What we need to deal with are not the limits to which men may go without physical exhaustion, but the limits within which they may work with zest and spirit and pride of accomplishment.

"When zest departs, labor becomes drudgery. When exhaustion enters, labor becomes slavery. Zest is partly a matter of physical condition, but it is also largely influenced by mental reactions.

"Zest in labor is influenced by another mental reaction well known to us but all too frequently neglected. Is a man working for himself or is he a hired man?

"Perhaps some day we may be able to organize the human beings engaged in a particular undertaking so that they truly will be the employer buying capital as a commodity in the market at the lowest price. I hope the day may come when great business organizations will truly belong to the men who

are giving their lives and their efforts to them.

Business's new obligation, said Mr. Young, "means responsible action as a group, devotion to its own ideals, the creation of its own codes, the capacity for its own discipline, the awards of its own honors, and the responsibility for its own service.

Mr. Young outlined the great contributions to society which the Business School might make directly through its graduates. One was the promotion of business standards and ethics, which today, he said, are without the moral safeguards afforded in a smaller community. A second was in the adjustment of the old problem of labor and capital. The third was in the elimination of the waste and suffering due to unemployment. A fourth was to train the "ministers of business" to a sense of the tremendous responsibilities which have grown up with the rapid advances in science and invention. Mr. Young also said:

"So far as the public is concerned, organized business has been quick to take the advantages of group action but has been slow to assume group responsibilities. Too frequently business men have acquiesced, even if they did not participate, in objectionable practices until an outraged society compelled amateurs to interfere. The amateurs were frequently in the Legislature and unwise laws were enacted.

"Legislatures reached out for abuses they could readily observe, but the causes of which they did not fully understand. Frequently the laws over-reached themselves and from the standpoint of society did more harm than the evils they were intended to correct."

Foreign Market And Export News

Welsh Depression Continues As Unsold Coal Piles Up

London, England, May 27.—The Welsh steam coal market is in a depressed condition and few orders are being booked either by home or foreign buyers. The fact that production is high accentuates the feeble condition of the trade.

Buyers are holding off in the belief that prices will fall still lower. Several pits have closed down, while others are blocked with loaded cars. Purchasers willing to accept immediate delivery are given concessions in prices.

The Spanish Norte Rys. have taken 30,000 tons at current prices. The usual placing of contracts to cover the second half of the year is conspicuous by its absence.

Prices at Newcastle are low, supplies are plentiful and buyers are scarce. In many cases discounts are offered to spot purchasers, but these concessions do not lure forth orders.

Cable advices received at Washington last week paint an even darker picture of the British situation. From practically every district reports are being received showing slight demand—especially contract business—short time working and inability to dispose of anywhere near the quantity of coal which could be mined. The situation has, of course, been aggravated somewhat by the longer working day, which has materially raised productive capacity.

Thus, while production costs would tend to be lowered by the longer working day, this advantage has largely been nullified by the fact that the increased output could not be disposed of and therefore shorter time has had to be worked in respect of fewer days per week.

April exports, which amounted to 4,300,000 gross tons, were less than those of March by about 15 per cent; and while this may be explained in part by the intervention of the Easter holiday period, nevertheless the daily average shipments for actual working days were less than in the preceding month. Shipments to major consuming countries practically all showed declines in April, including sharp drops in shipments to principal European consumers, as Germany, Netherlands and France, and also declines to most other

European countries and to South America.

There was a considerable increase in shipments to Canada, however, and there are hopes that if the American strike lasts for any period these shipments will continue to increase and possibly even may necessitate exports to the United States itself.

French Mines Hard Pressed

Paris, France, May 27.—French collieries find themselves in a difficult position at the present time. Sales are limited, prices are uncertain and profits disappear when an attempt is made to meet the competition of foreign coal. In view of the cost of living, it is impossible to further reduce wages without inviting a serious clash with the men. For the same reason it is considered inadvisable to curtail running time.

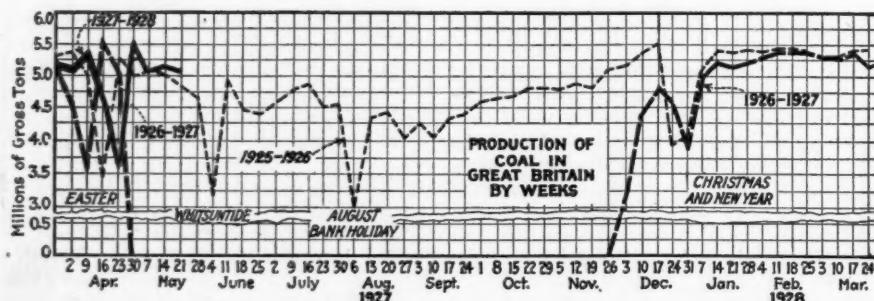
Stocks of industrial coals are piling up at the pitheads. A good demand still continues for household sizes as consumers are buying winter supplies.

Some relief is expected as the result of the appointment of a commission by the Chamber of Deputies to look into the repeated demand of the mines for preferential freight rates on native coal. Hope also is entertained that the government will authorize an increase in import duties, and the commission named has proposed increases of 2 fr. per ton on raw coal and coke and 3 fr. on patent fuel. It is unofficially reported that such increases will be made provided the French collieries will either maintain or lower their selling prices in the same degree.

Further aid has been offered by the adoption of provisions requiring a special license to import coal.

Belgian Market Improves

Brussels, Belgium, May 25.—A slightly better tone is reported in the Belgian coal market, with indications of approaching stabilization in both demand and prices. Household fuel has been in good demand for several weeks. There is, however, less tangible evidence of betterment in the industrial coal situation. As a matter of fact, production is running somewhat ahead of demand and foreign competition has not lessened.



Optimism with respect to the industrial coal outlook seems to arise from the fact that prices on some British offerings have advanced as much as 10 fr., but it is not yet clear that the increase has been general. It is true, however, that bituminous and semi-bituminous grades of industrial coal are stronger.

Anthracites are in a firm position because of orders coming from France, Holland and Switzerland. Some collieries are behind on shipments and prices will be advanced 10@15 fr. on June 1. Ovoids also are finding a wider market.

Perhaps the most persuasive indication of improvement in the industrial market is to be found in the demand for coking smaller, which hold between 137.50 and 142.50 fr. for first-quality and between 130 and 135 fr. for second-quality coal. This is attributed largely to the fact that French metallurgical interests are trying to divorce themselves as much as possible from the Ruhr ovens.

Export Clearances of Coal Week Ended June 2

FROM HAMPTON ROADS

	Tons
For Nova Scotia:	
Swed. Str. Adolf Bratt, for Halifax..	2,002
For New Brunswick:	
Nor. Str. Nidar, for St. John.....	1,617
For Canada:	
Nor. Str. Nidarholm, for Port Alfred	3,768
Swed. Str. Isa, for Chandler.....	2,139
For Martinique:	
Dan. Str. Nordkap, for Fort de France	5,081

Hampton Roads Coal Dumpings*

(In Gross Tons)

	May 26	June 2
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week.....	99,954	72,651
Virginia Piers, Sewalls Pt.:		
Tons dumped for week.....	84,542	104,966
C. & O. Piers, Newport News:		
Tons dumped for week.....	152,696	134,957

* Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices

(Per Gross Ton)

PIERS

	May 26	June 2†
Pool 1, New York....	\$5.50@ \$5.75	\$5.50@ \$5.75
Pool 9, New York....	5.00@ 5.25	5.00@ 5.25
Pool 10, New York....	4.75@ 5.00	4.75@ 5.00
Pool 11, New York....	4.50@ 4.75	4.50@ 4.75
Pool 9, Philadelphia..	4.80@ 4.95	4.80@ 4.95
Pool 10, Philadelphia..	4.55@ 4.80	4.55@ 4.80
Pool 11, Philadelphia..	4.35@ 4.70	4.35@ 4.70
Pool 1, Hamp. Roads.	4.50	4.50
Pool 2, Hamp. Roads.	4.30	4.25
Pool 3, Hamp. Roads.	4.00@ 4.10	4.00@ 4.15
Pools 5-6-7, Hamp. Rds.	4.20	4.10

BUNKERS

	\$5.75@ \$6.00	\$5.75@ \$6.00
Pool 1, New York....	5.25@ 5.50	5.25@ 5.50
Pool 9, New York....	5.00@ 5.25	5.00@ 5.25
Pool 10, New York....	4.75@ 5.00	4.75@ 5.00
Pool 11, New York....	5.00@ 5.20	5.00@ 5.20
Pool 9, Philadelphia..	4.80@ 5.05	4.80@ 5.05
Pool 10, Philadelphia..	4.60@ 4.95	4.60@ 4.95
Pool 1, Hamp. Roads.	4.60	4.60
Pool 2, Hamp. Roads.	4.40	4.35
Pool 3, Hamp. Roads.	4.30	4.25
Pools 5-6-7, Hamp. Rds.	4.20	4.10

† Advances over previous week shown in **heavy type**; declines in **italics**.

Current Quotations, British Coal F.o.b. Port, Gross Ton

Quotations by Cable to *Coal Age*

	May 28	June 4†
Cardiff:		
Admiralty, large.....	23s.	22s.6d.
Steam smalls.....	15s.	14s.6d.
Newcastle:		
Best steams.....	19s.	19s.
Best gas.....	17s.6d.	17s.6d.
Best bunkers.....	16s.	16s.

† Advances over previous week shown in **heavy type**; declines in **italics**.

Coming Meetings

Association of Iron and Steel Electrical Engineers. Annual convention in conjunction with the Iron and Steel Exposition, at Pittsburgh, Pa., June 13-18. Secretary, John F. Kelly, Empire Bldg., Pittsburgh, Pa.

New England Coal Dealers' Association. Annual meeting June 14-16, Hotel Griswold, New London, Conn. Executive secretary, E. I. Clark, Boston.

Colorado and New Mexico Coal Operators Association. Meeting at Boston Building, Denver, Colo., June 15. Secretary, F. O. Sandstrom, Denver, Colo.

National Coal Association. Annual meeting June 15-17, at Edgewater Beach Hotel, Chicago. Executive Secretary, Harry L. Gandy, Washington, D. C.

Illinois Mining Institute. Summer meeting June 16-18 at La Salle, Ill., by Steamer Cape Girardeau. Secretary, Frank F. Tirre, 603 Fullerton Bldg., St. Louis, Mo.

American Society for Testing Materials. Thirtieth annual meeting, French Lick Springs Hotel, French Lick, Ind., June 20-24. Secretary, C. L. Warwick, 1315 Spruce St., Phila., Pa.

American Institute of Electrical Engineers. Summer convention, June 20-24, at Detroit, Mich. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

Mining Society of Nova Scotia. Annual meeting at Baddeck, Nova Scotia, Canada, June 21-22. Secretary-Treasurer, E. C. Hanrahan, Sydney, N. S., Canada.

International Chamber of Commerce. Fourth congress at Stockholm, Sweden, June 27 to July 2.

Michigan-Ohio-Indiana Coal Association. Annual convention at Cedar Point, Ohio, June 28-30. Secretary, B. F. Nigh, Columbus, Ohio.

Illinois and Wisconsin Retail Coal Dealers' Association. Annual convention, the Hotel Pfister, Milwaukee, Wis., June 28-30. Managing Director, N. H. Kendall, 706 Great Northern Bldg., Chicago, Ill.

Annual First-Aid Meet for champion-ship of Pennsylvania (open to mining and industrial teams), Ebensburg Fair Grounds, July 9. Superintendent, H. D. Mason, Jr., Box 334, Ebensburg, Pa.

Second (Triennial) Empire Mining and Metallurgical Congress opens at Montreal, Can., Aug. 22 and continues to Sept. 28, under the auspices of the Canadian Institute of Mining and Metallurgy. Secretary, George C. Mackenzie, 604 Drummond Building, Montreal, Can.

New York State Coal Merchants Association. Fall meeting Sept. 8, 9 and 10 at Niagara Falls, N. Y. Executive secretary, G. W. F. Woodside, Albany, N. Y.

Recent Patents

Mine Car; 1,624,801. Walter S. Purdy, Huntington, W. Va., assignor to F. H. Gibbs, New York, N. Y. April 12, 1927. Filed Aug. 29, 1924; serial No. 734,432.

New Equipment

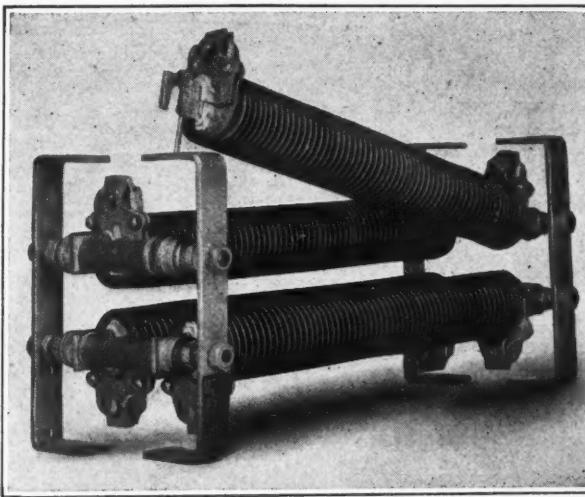
Economic Resistor Designed For Mine Locomotives

The new Type M resistor, designed and manufactured by the Westinghouse Electric & Manufacturing Co., is an important advancement in the design of resistors for the mine locomotive. It eliminates service interruptions caused by poor resistors, is rugged and durable, and reduces the cost of maintenance.

The resistor is built of tubular units,

mits wide spacing of hangers and bridging of wide spans is claimed. The assembly of the hangers as part of the monorail sections is stressed as materially reducing cost of installation of the equipment.

In construction the rail consists of two twin sections rolled from railroad rail steel. The sections are bolted together, back to back, to form a solid rail unit. The high vertical web of the rail is intended to provide maximum



This resistor for mine locomotives is said to have many advantages for this type of service

each having a steel center support, insulated by sections of porcelain. A resistance ribbon is wound around this porcelain in the form of a helix. The units are mounted on insulated tie rods supported on a strap steel frame.

The outstanding features of the new resistor include unbreakable construction. Shattering of any section of the porcelain does not affect the operation, for the helix requires only a fractional part of the support it receives. Moisture and atmospheric conditions have no effect on the winding, which is made of a special alloy. Each individual unit is easily removed without disturbing others. The resistor requires less space and results in a reduction of about 75 per cent weight over the grid type unit. Localized heating is eliminated because of good radiating characteristics, and the resistance in the ribbon is practically constant at all times.

Distinctive Monorail Track Has Two-Part Rail

A new and distinctive rail design for overhead hand-power monorail systems is announced by The American Monorail Co., W. Sixty-seventh St. and Pear Ave., Cleveland, Ohio. Features include a two-part rail, clamped together by means of bolts seated in slotted holes, suspending hangers assembled with the rail, and the elimination of splice clamps by staggering the joint of the two side members of the rail. Unusual carrying capacity which per-

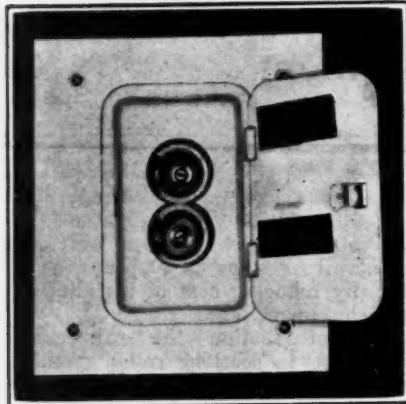
carrying strength, while the narrow over-all width dimension of 2 in. facilitates bending of the rail in the field to meet layout requirements. Holes for the clamping bolts are slotted to relieve the bolts of sheer stresses as the sections are being bent. Standard bent sections are furnished for all regular curves and for irregular bends on order.

The supporting hangers are steel forgings and are adapted to plain strap or adjustable bolt suspension. They are assembled in the rail head, as shown, and shipped as part of the rail sections. The standard spacing of the hangers can be shifted so as to meet any suspension requirements that may arise.

Announce New Panelboards

Two new residence panelboards have recently been introduced by the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. These types, the Residence and the Junior Residence panel, are said to be attractive in appearance, compact and sturdy, and economical in construction. They also provide for safety in use.

The Residence panelboard, equipped with from one to twelve circuits, is carried in stock with either two fuses in branch circuit or one fuse with a solid wire connection. The "Junior" Residence panel, fitted with from one to six circuits, is also available. This panel has a single fuse and solid wire con-



"Junior" Residence Panel

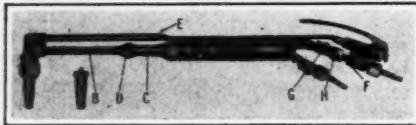
Furnished in either black or white, this panelboard is safe, economical, compact and attractive for residence installations requiring one to six circuits. In a larger size it is equipped for from one to twelve circuits.

nection for each branch circuit. It is furnished in either white or black. Both types are said to be unusually neat and attractive for residence installation.

Cutting Attachment Fits Welding Blowpipe

For users of Prest-O-Weld oxyacetylene welding equipment who wish to do a limited amount of metal cutting, the Oxfeld Acetylene Co., 30 East 42nd St., New York City, has recently added to its line the CW-101 cutting attachment for its W-101 welding blowpipe. This is intended to handle occasional rather than regular cutting work, and is especially advantageous when the amount and nature of the work does not warrant the purchase of a separate cutting outfit.

Connecting and disconnecting the attachment is claimed to have been made extremely simple so that it can be rapidly and easily done. To connect it to the W-101 welding blowpipe, the stem and nut assembly is first removed from the blowpipe. The short tube *B* of the attachment is then inserted into the mixer tube *C*. The stem nut *D* is not tightened until later. The long tube *E*



Especially Designed for Odd Jobs

Where the quantity and kind of cutting to be done does not necessitate a separate cutting outfit, this attachment for the regular welding blowpipe admirably meets all requirements.

is next held along the right hand side of the handle, and the union nipple *F* is sprung into the rear of the oxygen valve body *G*. The long tube is swung to the top of the handle, and the connection nut *H* is screwed on and tightened.

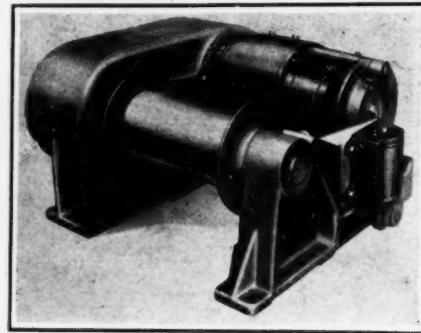
In disconnecting the attachment, the stem nut *D* and the connection nut *H* are first unscrewed. Then the long tube *E* of the attachment is swung to the right hand side of the handle and the union nipple *F* is sprung out of the rear of the oxygen valve body *G*. The at-

tachment is slid forward and the stem removed from the mixer tube.

Fitted with two nozzles, it is said that this attachment will cut steel and wrought iron up to 1 or 1½ in. in thickness. The oxygen pressures required for the CW-101 cutting attachment are practically the same as those for the C-101 cutting blowpipes. A table of pressures, included in the instruction pamphlet furnished with the attachment, simplifies the operator's work.

New Electric Hoist Requires But Little Headroom

A new "Lo-Hed" electric hoist that can be mounted in a fixed position, either overhead or on the ground, or can be placed on skids and used as a portable machine, has recently been



Operates in Confined Spaces

Among other applications, it can be used as a car puller and mine hoist, and at tipples on loading booms and for hauling loads up inclines.

announced by the American Engineering Co., of Philadelphia.

Uses claimed for the hoist include applications for contractors' work, derricks, as a car puller, mine hoist, for elevator work, ash handling, at coal tipples, on loading booms, for pulling loads up inclines, lifting furnace doors and, in general for any kind of lifting and hauling that can be done with the machine in a fixed position.

The standard machine consists of a smooth drum, driven by a motor through a train of spur gears, all mounted on a common bedplate. It is furnished in sizes for handling loads from 500 to 4,500 lb. Motor and gears are completely inclosed. The gears are of heat-treated drop-forged steel and run in an oil bath. Hyatt "high duty" roller bearings are mounted on the ends of all gear shafts. The cover of the gear case is easily removable.

The drum has large flanges which prevent the rope jumping the ends and give maximum stowage capacity. One bearing of the drum shaft is lubricated by splash from the gears and the other by an Alemite fitting. The motor is equipped with ball bearings and is especially designed for hoist service. Either an alternating or a direct current motor can be furnished. The controller is of the single-speed, reversing drum type.

When desired, various modifications in the hoist can be made such as supplying grooved drums, air motors or steam motors, push button and remote control, holding and lowering brakes, extension shafts with additional heads, and the like.

Industrial Notes

Chester W. Rice, who has been engaged in development work in the research laboratory of the General Electric Co., has been named assistant to E. W. Allen, vice-president in charge of engineering. Mr. Rice will give special attention to new developments.

Name G. E. Engineering Council.—In conformity with the action of the board of directors of the General Electric Co., an engineering council has been appointed. The council includes E. W. Rice, Jr., honorary chairman (ex-officio); E. W. Allen, chairman; Elihu Thomson, A. C. Davis, W. R. Whitney, W. L. R. Emmet, C. C. Chesney and C. E. Eveleth. The purpose of the engineering council, says the announcement by Gerard Swope, president, is to advise with the vice-president in charge of engineering on the various problems that arise from time to time, and as to the direction and scope of the engineering and scientific work. The council may invite other engineers to meet with it, and at such times may give them the status of regular members.

The Buffalo Forge Co. and Buffalo Steam Pump Co. of Buffalo, N. Y., manufacturers of heating, drying, ventilating, air conditioning and pumping equipment, have established offices in Birmingham, Ala., at 720 Brown-Marx Building, with P. T. Elliott, engineer, in charge.

The Link Belt Co., Philadelphia, Pa., manufacturer of conveyors and other mining equipment, has established a district office at Birmingham, Ala., with W. H. Norton, formerly of the Chicago office, in charge, and Harold E. Haught, of Pittsburgh, as assistant. Offices are located in the Brown-Marx Building.

J. K. Haigh has been appointed Los Angeles branch manager for the Rix Company, compressed air engineers, whose main office and factory is located in San Francisco.

S. L. Morrow, formerly representative of the Link-Belt Co., at Birmingham, Ala., has added to his agency the Stearns Conveyor Co., D. O. James Mfg. Co. and Steico Steel Co. His offices are in the Brown-Marx Building, Birmingham.

H. B. Newell has been elected vice-president and director of the Fawcett Machine Co., Pittsburgh, Pa. Mr. Newell for several years has been works manager.

The Geo. D. Whitcomb Co., Rochelle, Ill., manufacturer of gasoline and electric locomotives, announced the appointment of the Clyde Co., 309 Magazine St., New Orleans, as representative for Louisiana and the southern halves of Mississippi and Alabama. The American Machinery & Supply Co. will cover the entire State of Nebraska and western Iowa. A. R. Amos has returned to the Whitcomb company and is located at 1014 Harrison Building, Philadelphia.

The Lincoln Electric Co., Cleveland, Ohio, announces the appointment of Royal D. Malm as Western district sales manager, with headquarters at Chicago.